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QUARTERLY REVIEW.

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EDWARD I. SEARS, LL.D.

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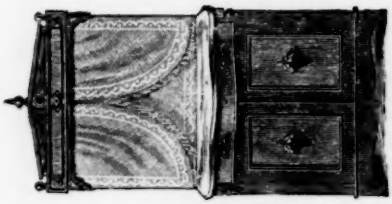

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1866	1,457,314 95	1866	585,917 51
1867	2,218,344 29	1867	819,315 23
1868	3,664,060 18	1868	1,382,199 68
1869	5,081,973 50	1869	1,868,904 50

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" " " 1868..... 8,229
" " " 1869..... 8,623
Increase of 1868 over 1867—42 per cent.
" 1869 " 1867—48 "

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" 1869..... 1,432,779 00
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THE

NATIONAL QUARTERLY REVIEW.

NO. XLIII.

DECEMBER, 1870.

ART. I.—1. *Lives of the most Eminent Painters, Sculptors, and Architects.* By GEORGIO VASARI; from the tenth Italian edition of 1832–38. ("*Vite de 'piu excellenti Pittori, Scultori, e Architetti.*"*) London. 1839.

2. *Dictionnaire Historique des Peintres de toutes les Ecoles.* Par ADOLPHE SIRET. Bruxelles et Leipzig. 1848.

3. *The Hand-book of Painting, of the German, Flemish, and Dutch Schools, based on the Hand-book of* F. F. KUGLER. Enlarged and re-written by Dr. WAAGEN, Director of the Royal Gallery of Pictures at Berlin. 2 vols. London. 1860.

4. *Anecdotes of Painting in England, with some account of the principal Artists.* By the Hon. HORACE WALPOLE, with additions by the Rev. JAMES DALLOWAY. 3 vols. Printed at the Shakspeare Press. London. 1828.

THE voluminous records of Art, scattered through different languages and countries, and in many instances withheld from general examination with jealous care, although of inestimable

* This work was published by the author at Florence, in 1550, and again in 1568, with portraits and additions, down to 1567. It is the text-book of Italian Art, and upon it are based most of the kindred works of more recent dates; its editions and translations are numerous.

value to scholars, are seldom attainable by the desultory reader; he lacks not only time and opportunity, but often inclination to pursue with profit the study of works essential to an intelligent comprehension of the subject of his thoughts. Therefore, his requirements are best supplied by the writer who presents the essence of those particulars which afford a fair representation of the subject.

Although our title may not suggest any names of exceedingly great fame or genius, or evoke the images of the masterpieces of the pictorial world, still we shall be able to show that, in all ages, women have been jealous worshippers at the shrine of art, and have in many instances been touched with the divine fire of inspiration. We shall consider our artists and their works, but necessarily briefly, in a national order of chronology, for they have been neither sufficiently numerous nor distinctive in manner to have established methods or schools of art; but we trust that the comparative paucity of materials which we have collected with much patience will not detract from the interest of our subject. We cannot admit the harsh ultimatum of Bellori, that mediocrity is no more admissible in art than in poetry; it would be as wise to banish violets from our gardens because roses bloom more gloriously. Every conscientious embodiment of the artistic idea must possess some degree of merit, and this degree will always be allowed by the impartial critic. To pronounce with justice upon the status of an artist, we must give due attention to design, which is the soul of the work, and not rest our decision upon the quality of its execution; an acquirement at best. Progress in art must necessarily depend more or less upon the social and intellectual life of the artist; moderate degrees of genius flourish in accordance with surrounding influences, and are liable to depression from adverse circumstances which would serve only to invigorate its nobler developments. For this reason we must base our criticisms upon the obstacles of seclusion and feminine weakness, as well as upon the instruction and opportunities of study which they

enjoyed. In some instances we shall find them the best pupils of their masters, rendering their different styles with purity and finish.

Art has always been a favorite pursuit with women, and this is doubtless owing in a great measure to the fact that its practice does not necessarily withdraw them from their natural sphere. Giorgio Vasari says, in his life of Properzia de 'Rossi, that it is a remarkable fact that, whenever women have at any time devoted themselves to the study of any art, or the exercise of any talent, they have for the most part acquitted themselves well, and have even frequently acquired fame and distinction.*

Before introducing to our readers the most meritorious female artists of the period which our article embraces, we will glance briefly at the general state of art down to the time of our first sketch. Sculpture, and outlines drawn upon colored stone surfaces, were practised early by the Phœnicians and Egyptians; and the pencil in coloring was employed by the Greeks. We are told that Belus, the son of Nimrod, caused a statue for idolatrous worship to be made about two hundred years after the Deluge. His relative Semiramis, queen of Babylon, placed figures in bronze among her new edifices. The Hebrews learned the art of casting metals from the Egyptians, and first exercised it in the manufacture of the golden calf; this art, as we are informed, was afterwards practised by them under divine command.† Diodorus affirms that the Egyptians received their knowledge of sculpture from the Ethiopians, and in their turn imparted it to the Greeks, who perfected it. Drawing from nature, according to Pliny, originated with Gyges of Lydia; Cleophomtes filled in the

* We would suggest to some of the violent partisans of Women's Rights in this age, that women have generally been conceded a pretty correct position in art, literature, or any of the liberal sciences in which they could, by their gifts or abilities, claim a place; we ask these social regenerators to reflect whether a moral may not be deduced from our proposition for them, to do more and talk less, in order to establish their sex in the position which its most worthy and intelligent members desire.

† See *Exodus*, c. xxxii., where Bezaleel was appointed to fashion the golden cherubim and sacred vessels.

outlines with color; and Apollodonis perfected the art of pencilling, and the reproduction of light and shade. The names of Phidias and Praxiteles need only be mentioned in order to recall Greek excellence in sculpture. Among the Romans slaves were forbidden to practise the arts in cities, but if they became successful in their pursuit, were made free; and national honor was paid to eminent artists. We have received, through sources which are scarcely more than traditionary, accounts of several female painters among the early Greeks and Romans; the graceful story of the daughter of Dibutades, who drew the outline of her lover's features upon the wall by the light reflected from a brasier, as they sat together the night before his departure from her country; Timarta, whose picture of the goddess Diana Pliny saw at Ephesus; Helma, whose Darius conquered by Alexander, formed the subject of a mosaic found at Pompeii; and Laia, who painted ivory miniatures at Rome about one hundred years before the Christian era.

The barbarians who ravaged the empire destroyed many of the finest works of ancient art, while they seem to have spared architecture to a certain extent, probably because they found it too substantial for their means of destruction; but the practice of the arts had declined before their coming, for in the church of St. John Lateran, erected by Constantine, the figures of Christ and the apostles were of an inferior order of merit. When Constantine removed the seat of empire to Byzantium, he took with him all the best painters and sculptors of his time.

Infinitely more injurious to art than all the ruin inflicted by the barbarians was the jealous fury of the early Christians; it spared no form of painted or sculptured beauty of the mythological world, or triumph of heathen architecture which its powers could reach; and the wreck was completed by Constans II. The noblest embodiments of genius were lost for a time; indeed, it would seem as if those which have reached us had been preserved by destruction, for they were found in the

midst of and beneath ruins, sheltered from complete annihilation by the accumulated fragments of temples and palaces which had fallen upon them. It is to the painters of the intermediate period which followed that we are indebted for the absurd and grotesque forms of art which people the few succeeding centuries. About the beginning of the eleventh century architecture began to return to the beauty and unity of the antique style; in the following centuries the purer type was gradually restored, and to this period we trace some of the most celebrated churches of Italy. The Latin conquest of Byzantium in 1204, and the subsequent intercourse between the Greeks and Italians, seem to have promoted the revival of art, for schools were soon established at Venice, Siena, Pisa, and Florence. The Florentine school of art takes precedence in time and distinction, partly owing to its minute and elaborate history by Vasari. At the time of Giotto, in the fifteenth century, it had abandoned conventionalism for nature; and under Masaccio its individuality became marked, and perspective received attention. About 1450 painting in oils was successfully practised by Antonello da Messina, who had learned the secret from the Van Eycks, and also by his pupil Domenico Veneziano in 1460–70. In the sixteenth century local coloring, dramatic composition, ideality of form, and the correct transitions of light and shade were carefully studied. From these combinations we have the development of painting in its essential principles. At this epoch lived Lionardo da Vinci, Michael Angelo Buonarroti, Raffælo, and Fra Bartolommeo. About 1497 the crusade of Savonaola against nude figures in art caused the destruction of many fine works, and the fanaticism had a most pernicious effect. In May, 1498, Savonaola was strangled by the opposite religious party, and the ill effect his preaching had produced on art gradually wore away. About the beginning of the sixteenth century Italian art was in a flourishing condition, and the influence of the then existing styles has always attended its successive ages. At this period there were paintresses and sculptresses of no small degree of merit.

The foremost of these was Properzia de 'Rossi, who was born at Bologna in the year 1501. Vasari calls her "a maiden of rich gifts, who was equally excellent with others in the disposition of household matters, while she gained a point of distinction in many sciences well calculated to awaken the envy, not of women only, but of men also." She was remarkably beautiful, a proficient in music, and an inspired singer. Her first artistic effort was the carving of peach stones, a work demanding extraordinary skill and patience, and producing marvellous effects. The Crucifixion, comprising a vast number of figures, all delicately treated and admirably arranged, carved upon a single peach stone, must indeed have been a complicated and wonderful work. Of these stones not one well authenticated specimen exists at the present day. There is however, a cherry stone, preserved in the cabinet of gems at Florence, representing no less than sixty heads carved with minute care, which is said to be the work of this artist. Of her marbles there are many fine specimens extant; her first bust, that of the Count Guido de 'Pepoli, which obtained for her the commission for the marble figures in bas-reliefs on the gates of the façade of the church of San Petronio, is now placed over a door in the interior of that building. The subject of the sculptures is the flight of Joseph from Potiphar's wife; the detaining gesture of the female figure is characterized by inexpressible grace and beauty. The artist is said to have given vent to the agony of a hopeless love in this beautiful work. There were other of her productions in the same church, from among which may be selected for excellence the figures of two angels in the chapel that contains Tribolo's Assumption of the Virgin. The Madonna de 'Rossi also engraved on copper, and executed some fine pen drawings; of the latter style of art Vasari preserved some copies from Raffaelo. Her fame extended throughout Italy, and Clement VII. sent for her to visit him after the coronation of the Emperor Charles V. in 1530; but the unhappy woman had recently died. She was buried in the *Spedale della Morte.*

Her countrymen esteemed her as one of the greatest wonders of nature; nor are admirers wanting in later ages. Siret says of her, that she cultivated "tous les arts, et fut douée des tous les talents et de toutes les graces; morte, par suite d'un chagrin d'amour, à fleur de son âge. Sculpteur célèbre; graveur; dessinateur; cultiva l'architecture et la perspective."*

Sister Plantilla Nelli, a nun of the Dominican convent of Santa Caterina, on the Piazza di San Marco, at Florence, was born in 1523. She was the follower in art of Fra Bartolommeo, and the contemporary of Andrea Vannuchi, called Del Sarto, after whose design she painted a Descent from the Cross; this picture was preserved in her convent in Lanzi's time. The convent was suppressed in 1812, and its buildings attached to the Academy of Fine Arts; the refectory of the convent is now the library of the academy, and in it is preserved the Last Supper, by Sister Plantilla. An Epiphany, with figures after the ancient method, and a landscape which would reflect credit on the modern school, was also among her accredited works. In the choir of Santa Lucia, at Pistoja, Vasari places a large picture of the Madonna and Child surrounded by seven saints; and he mentions another large painting sent abroad by the director of the hospital at Lelmo. An inferior copy of the Adoration of the Magi hangs in the corridor which connects the Pitti Palace with the Uffigj. Her family preserved a large Crucifixion, composed of many figures, after the manner of Ceeclim del Frate, a pupil of Fra Bartolommeo. Her style was careful and highly finished, and a fair imitation of Frate, whose method was to design first the naked figure and afterwards to drape it with strict attention to chiaro-scuro. Sister Plantilla possessed a considerable number of drawings in chiaro-scuro by Fra Bartolommeo; some

* We subjoin her epitaph in the original:

"Si quantum naturæ, artique Propertia, tantum
Fortunæ debeat muneribusque virum
Quæ nunc mersa jacet tenebris ingloria laude
Aequasset celebres marmoris artifices.
Attamen ingenio vivido quod posset et arte
Fæminea ostendunt marmora sculpta manu."

of which are in the Florentine gallery; others of more doubtful descent were said to have been rescued from destruction in the convent after the sister's death, and sold to the grand duke of Tuscany; from the Tuscan collection they were brought to England, and owned by Sir Benjamin West; after his death they became the property of Sir Thomas Laurence, and subsequently reached the collection of the King of Holland. Some pictures in Berlin, said to be the sister's work, are distinguished by depth and purity and careful execution. She died in 1588.

Sofonisba Anguisciola, the most gifted member of an artistic family, was born at Cremona about the year 1530. She received instruction from Benardino Campi, and became one of his best pupils; after he left Cremona she continued her studies under Soiaro. She attained such a degree of perfection as to be esteemed one of the finest artists of her age. Lanzi and Vasari commend her in the highest manner; and Van Dyck says that he received from her conversation more information and knowledge of art than from any of his studies. She was court painter to Philip II. of Spain, and took portraits of Pius IV.* and nearly all the royal and prominent personages of the period. She married twice, and died at Genoa

* We subjoin the following letters between Sofonisba and Pius IV., to show the estimation in which she was held by her cotemporaries:

No. 1. "Holy Father: From the Most Reverend Nunzio of your Holiness I understand that you desire to have from my hand the portrait of her Majesty the Queen my mistress. Now as I consider the commission a singular grace and favour, having to serve your Holiness, I have requested permission from her Majesty, who willingly granted the same, perceiving in this wish a proof of the paternal affection which your Holiness bears to her Majesty; I send therefore the portrait by the occasion afforded to me by this cavalier, and if in that painting I shall be found to have satisfied the wish of your Holiness, I shall find infinite comfort in the knowledge thereof; but I will not omit to say that if the beauties of mind possessed by this most illustrious Queen could also be represented by the pencil to the eyes of your Holiness, you could see nothing more admirable. As respects the delineation of those features which may be portrayed by art, I have not failed to use all the care which I could command, to the end that your Holiness might behold them in truth.

"And with this conclusion I kiss the most holy feet with all reverence and humility.

"From Madrid on the 16th of September, 1561.

"The most humble servant of your Holiness,

"SOFONISBA ANGUISCIOLA."

No. 2. "Pope Pius IV.—*Dilecta in Christo filia.*

in 1620, at the advanced age of ninety years, infirm and blind through too close application to her art. A portrait by herself was in the ducal gallery at Florence, and another in the possession of the Lomellini family at Genoa in Lanzi's time. At the present period there is one at Althorpe, England, which shows a pleasing face and regular features, olive complexion, large black eyes and dark hair, and a finely-formed, graceful head. The marriage of St. Catherine is preserved at Wilton, England. The artist's style was free and graceful, her coloring clear, and her portraitures life-like. Vasari placed in his collection of drawings by the "*excellenti pittori*," a sketch by her of a girl laughing at the terror and confusion of a boy whose hand is caught in a lobster's claw.

Irene di Spilimbergo, pupil of Titian, who was born at Udina in 1540, is mentioned by Rudolphi as a good artist and an accomplished woman. She died in 1559, just as she was beginning to exercise her art in a manner highly creditable to herself and her master. There are said to be three of her pictures in the Casa Maniago, of rich and harmonious coloring, but of imperfect design. Lanzi says of her Bacchanals at Monte Albodo: "The drawing is careless, but the coloring is worthy of the best age of art. We see the reflected rays of her great master's glory; the soft yet rapid gradation of tint, the clear touches, the repeated applications of color which give a veiled transparency to the tone, the judicious grouping, the combined majesty and grace of the figures, all recall the genius of Titian." Tasso and the minor poets sang her charms and talents, and a collection of these eulogies was published at Venice twenty years after her death.

We have received the portrait of the most illustrious Queen of Spain, our dearest daughter, which you have sent us, and which has been most acceptable, as well on account of the person represented, whom we love paternally, for her piety and many pure qualities of her mind, to say nothing of other considerations, as because the work has by your hand been very well and diligently accomplished.

"We thank you for it, assuring you that we shall hold it among our most valued possessions, commending this your skill, which, albeit very wonderful, is nevertheless as we hear, the very smallest among the many gifts with which you are endowed,

"And with this conclusion we send you again our benediction. May our Lord have you in his keeping.

"Dat. Romae, die 15 Octobris, 1561."

Lavinia Fontana, a disciple of the Caracci, was born at Bologna in 1532; she was the daughter of Prospero Fontana, the painter of several altar-pieces at Bologna and Rome, and the instructor of the Caracci. Lavinia was a member of the Roman Academy, and her style of portraiture was highly in favor with the ladies whom she painted, on account of the elaboration of detail, which displayed to advantage their ornaments and jewels. Her style was soft and harmonious, and full of tender expression; and Mazzolari, describing a cabinet piece of the Holy Family, painted by her for the Escurial, says it is "a picture so vivid, so gay and graceful, and of such glorious coloring, so full of beauty, that one is never weary of admiring it." Lanzi commends her Sheba at the Throne of Solomon, which he saw in the collection of the Marchèse Zambeccari. There is a fine Venus in the museum at Berlin; and a Nativity of the Virgin, with a night effect, of rare merit, exhibited in her native city. She was esteemed by her contemporaries as a good artist and a virtuous woman. She died in 1614.

Marietta Tintoretto, or Robusti, was born in Venice in 1560. She was the pupil and companion of her father, Giacopo Tintoretto, and evinced an early genius for music as well as for art. Under her father's tuition she studied design, composition, and coloring, after antique models, and displayed a taste and skill which would have eminently qualified her for historical subjects, but she devoted herself to portraits; her first was that of Marco dei Vescovi, and it was the firm basis of her future fame. Her excellent manner was formed under her father's best instruction, and he was second only to Titian. She possessed an easy elegance of design, an admirable coloring, and a touch light, free, and spirited. Most of the nobility of Venice were painted by her; and she received invitations to the courts of the Emperor Maximilian, Philip II. of Spain, and the Arch-duke Ferdinand; but her father cherished for her such a tender affection that she would not consent to a separation from him. Several of her works are preserved in

Venice, and one in the Palais Royale at Paris; the latter is the picture of a male figure seated at a table, with books, papers, a crucifix, and a watch beside him. "Her exquisite taste, her soft and gentle touch, and her skill in coloring were remarkable both in works of her own invention and in those due to her father's genius." She died in 1590, and was buried in the church of Santa Maria dell' Orto.

Artemisia Gentileschi, the daughter of Orazio Lomi, was born in 1590. She far excelled her father in artistic skill and merit. She was improved in art by Guido Reni, and closely studied the works of Domenichino, but did not confine herself to these masters. Her style was powerful and vivid, exhibiting some startling effects, with great natural freedom and excellent finish. Her portraits were celebrated all over Europe, and her original pictures have attracted universal attention. A Judith slaying Holofernes, in Florence, is strongly colored, and treated in a manner to inspire awe in the beholder. A Susanna and the Elders, in the possession of the De Medici, is pleasing from its elegance and finish. Charles I. of England conferred high honors upon her and gave her several commissions; her David with the head of Goliath, and a female figure of Fame, both of great excellence, were among his collection. Her own portrait is at Hampton Court. Artemisia lived in great splendor at Naples, where she had formerly married Antonio Schiettesi, concerning whom she inquires in a letter to Del Pozzo, dated 1637, "*Si servita darmi nuova della vita o morte di mio marito;*" an inquiry certainly not very expressive of profound conjugal affection. Indeed, Graham, in his "English School," says she was as famous for her amours as for her art. She died in 1642.

Caterina Cantoni, who lived in 1591, wss greatly skilled in the art of embroidering after nature and paintings; she died young. A noble Milanese lady named Pellegrini, of about the same period, is called by Lanzi the Minerva of her age; she embroidered the vestments which were preserved in the great cathedral at Milan in 1787, and were considered curious specimens of art.

Arcangela Paladini was born in 1599; she excelled in music and embroidery, and had a charming voice; she lived at the court of Maria Magdalena, Arch-duchess of Austria, at Florence, and was greatly esteemed and admired. Her portrait by herself was hung in the ducal gallery, in the cabinet *de pittori*, in 1621; it remained there in Lanzi's time, and he observes that it was a great honor. He places her in the Florentine school of the seventeenth century. She died in 1622.

Laura Bernasconi, a flower painter, a follower of Mario Nuzzi della Penna, called De' Fiori, has many works in good Italian collections; but an error in the coloring, probably from the improper use of oils, gives them a black and injured appearance. She followed the Roman school of the early seventeenth century.

Aniella di Rosa, wife of Agostino Beltsamo, was born at Naples about 1613. She was the companion of her husband's labors, and they together painted many pictures which were finished by their teacher, Massimo, and sold as his own. Her original designs, and the praise bestowed upon her, prove her to have been an excellent artist; she united correct drawing and masterly grouping with elegance and grace, and soft transparent coloring. She was murdered by her husband in a fit of jealous rage in the year 1649.

Elizabetta Sirani was born at Bologna in 1638. She was an artist of great merit, and a faithful follower of Giudo's second manner; her execution was grand, her effect and relief powerful, and her style entirely free from the natural timidity of her sex. Her pictures were numerous, carefully elaborated, and singularly beautiful. Malvasia says that, according to her own register, she had completed over one hundred and fifty pictures, as well as some very fine etchings, before her sudden death. The Twelve Crucifixions, in the Cathedral of Piacenzia, were a marvel of her style. Her Christ at the River Jordan, her St. Anthony, and many other works were preserved in the Zambeccari and Caprara Palaces, and in the Corsini and Bolognetti collections at Rome; some small paint-

ings on copper at Bologna and Rome were extremely valuable. Her commissions from distinguished personages throughout Europe were innumerable, and her early and tragic fate alone prevented her from becoming the first artist of her age. She was as admirable in the homely ways of daily life as she was super-excellent in art, and her filial affection and feminine grace completed a character of almost ideal perfection. Her death was sudden, like that of Aniella di Rosa, having been poisoned, in 1665, by one of her own maids, instigated it is said by her rivals in art. Her remains were buried in the tomb of Guido Reni, in the chapel of the Madonna del Rosario, in the church of San Domenico.

Isabella del Pozzo's name was found by Lanzi's, about 1666, on a picture at San Franciso, of the Virgin and Saints, and he says that at that time there were few better artists at Turin. In 1676 she was appointed court painter to the Electress Adelaide of Bavaria. Giovanna Fratellini, who lived about this time, is mentioned by Lanzi as "an illustrious artist of the school of Gabiani." Pilkington says that her touch was light and free, her coloring natural, her draperies various and appropriate, and her pictures enriched by a judicious use of architectural drawing. Her portrait in the Florence Gallery represented her in the act of painting her favorite son and pupil Lorenzo, from the affliction of whose death she never recovered, and whom she did not long survive. She painted the portraits of Cosmo III. and his family in a large picture containing fourteen figures; its action was admirable, and its coloring rich and warm. She drew in crayon, and painted in oil and enamel, both in miniature and in life size. Dorathea Aromatari, who lived about 1660, according to Boschim, "produced with her needle all those beauties which the finest and most diligent artists exhibited with their pencils." Chiara, daughter of Varotari of Venice, a pupil of Paul Veronese, and founder of a flourishing school of art at Padua, is highly praised by Ridolfi for the beauty of her portraits; her own was placed in the collection of the grand duke of Tuscany

about the middle of the seventeenth century. She died full of years and honors about 1660. Guilia Cortese was born at Florence in 1670, and studied under Pietro and Livio Helma; she was eminent in miniature painting, which she learned from Galantini, and much admired for a pleasing natural coloring and the lively resemblance of her portraits.

Rosalba Carriera was born in 1675 at Venice; she was the pupil of Antonio Balestra, and learned the details of portraiture from her relative Pellegrini; she painted mostly in pastel, in which Zanetti says she attained the greatest perfection. Her pictures evinced much grace and beauty of coloring; and her accurate drawing, and soft, delicate touch, gave her portraits an expression of extreme fidelity to nature; she also excelled in the use of the crayon. She was elected member of the academies of Paris, Bologna, and Rome; the king of Denmark visited her at Venice, and her own collection of works was sold to Augustus III., king of Poland, at a high valuation. She was patronized by all the royalty of Europe, and the various academies of art vied with each other in doing her honor. While in France she kept a journal which she entitled "*Diario degli anni* 1720 *e* 1721. *Scritto da Rosalba Carriera;*" it was published at Venice in 1793 by Giovanni Vianelli, the collector of a fine number of her crayons and paintings. Her portrait, in the possession of Gianbattista Sartosi, represents her with a wreath of cypress leaves, emblematical of her gloomy presentiments concerning herself. She became blind before she reached the age of fifty, and died in Venice in 1757, deprived of reason as well as of sight.

Rosalba's name is the last of any great celebrity which we meet among the female artists of the Italian school of the eighteenth century; and with it we close our record of the women of her land who have gained for themselves an enduring fame, and for their fair southern country the reputation of having given birth to some of the highest artistic incarnations of all ages. The Cinquecento style was the latest essential development of Italian art; technical execution was the prom-

inent characteristic of the seventeenth century; and the eighteenth added more ornament and romantic expression, but no new excellence; and although our present century has produced some bright examples of patriotic devotion among the fair sex of *la bella Italia*, it has not illumined the horizon of art with any great and shining light.

In Germany and the Netherlands there are no traces of paintings previous to the Christian era, when Charlemagne attempted to introduce some of the refinements of Christian art into his dominions, chiefly in the form of architectural decorations; these paintings have been destroyed, and the sole artistic remains of that period which have reached us are some MS. illuminations contained in evangeliariums preserved in the imperial library, and in the library at Trèves;* they are awkward and feeble, and gaudily colored. These MSS. of the French and German schools reach from the time of Charlemagne down to the middle ages, and were executed generally by members of the religious orders of both sexes. The twelfth century saw great progress in art made in Germany and the adjacent countries; the style was an admixture of the Italian and Byzantine, and the subjects were the adventures of Charlemagne and his knights, the Song of the Niebelungen, and the Apocalypse. The manner was grotesque and picturesque, full of symbolical meaning, with very little or no light and shade, and careless of execution. At Cologne some specimens remain in the baptistry of St. Gereon, and on the roof of St. Michael's Church at Hildesheim. The choir and left aisle of the cathedral at Brunswick contain others which have been very unskilfully restored; they date about 1250. The most important remains of art in this period are some fragments of tapestry, preserved in the abbey of Quedlinburg, the work of the Abbess Agnes and her nuns, about the year 1200; the subjects are allegorical, and the designs evidently by different

* Miniature painting derives its name from "di minio," to paint by reduction of size; the term seems to have been first applied to the small illuminations of ancient MSS.

artists; some partaking of the stiff, ordinary manner of treatment, while others are full of grace and symmetry, and entirely free from the peculiarities of early Christian models. From 1250 to 1350 art in these countries was evidently restricted to the illumination of outlines; from 1350 to 1400 the outlines softened, the tints grew more harmonious, and the transitions from light to shade more melting. Dr. Waagen gives some beautiful representations of the paintings on an altar-chest preserved in the museum at Dijon, which was made by the order of Philip the Bold, about the year 1400. The school, after whose manner this chest was painted, attained its perfection at Cologne about 1500; it was spiritual, peaceful, and marked with moral purity; its chief weakness was a deficiency in anatomical knowledge. The brothers Van Eyck, who flourished about the beginning of the fifteenth century, introduced into the German schools the use of oil in painting according to their peculiar method; their style was highly artistic, and the perfection of the tendency which art had followed in the preceding age. Oil in a crude form had been used in painting for inferior purposes previous to the time of the Van Eycks, but they improved so much in its preparation that all injury to colors was avoided, and their method was speedily adopted by other schools of art. There was a sister of the Van Eycks, named Margaret, who is said by Kugler to have been a skilful painter, but of whose works he mentions no remains. Karl Von Mawder says that she died unmarried; she lived from 1370 to 1400, and was buried in the cathedral of Ghent.

Sabina Von Steinbach is said to have been the daughter of Erwin Von Steinbach, and his co-laborer on the Strasburg Cathedral, in the fifteenth century; the groups on the southern aisle are said to have been executed by her; they represent the Christian church and Judaism; the figures of the first group have a lofty and graceful aspect, bearing aloft the host and cross, and wearing crowns; the latter stand with downcast eyes and drooping air, holding arrows and the shat-

tered tablets of the Law. There are also four bas-reliefs of the Virgin's life and death; and on a statue of St. John are inscribed Latin lines, translated as follows:

"The grace of God be with you, O Sabina,
Whose hands from this hard stone have formed my image."

Anna Maria Schurmann was born at Cologne in 1607. When but seven years of age she cut figures in paper with great precision; and at eight drew pleasing heads in crayon. Possessed with an ardent desire to acquire knowledge, she is said to have been complete mistress of over a dozen languages, and the friend of distinguished men of learning; in friendship her qualities were admirable, and her charity was unbounded. Her literary labors were extensive, but the last years of her life were devoted to the establishment of the doctrines of Labadie, to the entire detriment of all other aims. She produced such meritorious works that a single small portrait by her was valued by Honthorst at one thousand florins —about four hundred dollars. She carved in wood and ivory, and modelled in wax, with great facility and taste; and exercised the art of engraving on copper and glass with much skill. A proficient in music as well as the languages, she united to all her acquirements a modesty which equalled her merit. William Penn, in his "Journey in Germany," gives an account of an interview he had with this paragon of her sex, at Vivert, in 1677, one year before her death; she had established in this place, in connection with the Princess Palatine, Elizabeth, a refuge for the scattered followers of Labadie. She gave all her wealth to the poor during her lifetime.

In 1627 Margaret Godewyck, called the "second Schurmann," was born at Dort; she was instructed in art by Nicholas Maas, and painted diversified landscape with great taste and pleasing effect; she also embroidered flowers from nature with the greatest perfection. Her erudition is said to have been very extensive. She died in 1677.

Maria Van Oostenoyck, the pupil of Jan David de Heem, was born at Nootdorp, near Delft, in 1630. She painted

flowers on vases and glasses, and her pictures are rare and deserving of high rank in her form of art. She received commissions from Louis XIV., William III., the Emperor Leopold, and King Augustus I. of Poland. A picture in the Vienna gallery, of a large sunflower, with tulips and poppies, is a faithful reproduction of nature, with a brilliant and glowing color and great beauty of finish, but the arrangement is tasteless, and the green color of the leaves blackened by age. There is a piece in the gallery at Florence with all the merits and none of the defects of the former one. The two specimens in the Dresden gallery are not so meritorious. Her composition was often weak in arrangement and gaudy in combination of color, but her flowers themselves were the mirror of nature, with a depth and brilliancy not attained by any other artist; her execution was broad, free, and highly finished. She died in 1693, after a quiet life spent in the study and delineation of her favorites.

Mademoiselle Rosée was born at Leyden in 1632; she was an artist of such extraordinary merit that she was called the Sorceress. According to Houbraken she produced her pictures on a rough panel, in what manner, and with what instruments, was unknown; but her colors were so manipulated that her works had the appearance of the most delicate and perfect finish of the pencil and oils. Some writers affirm that she worked with a preparation of floss silk, selected with the utmost care and graded to the perfection of tint. Her coloring was blended and softened, and united with such incomparable art that the warmth and glow of the flesh tints were life-like; and at a slight distance it was impossible to discern the manner in which the picture was executed. Whatever the manner may have been it was so magical that the matter was unsurpassed. Michel Carré said of one of her portraits: "It cannot be believed that it is not done with the pencil." Her portraits were striking in resemblance; and her landscapes, flowers, and architecture were imitated perfectly. One small landscape described by Houbraken was sold for five hundred

florins; the subject was the trunk of an old tree, covered with moss, with a large spider weaving his web among the leaves and branches; every part appears with so great a degree of force, so well relieved, so true, and so natural, that it was always beheld with astonishment. Of her pictures still preserved, the one in the cabinet of paintings at Florence was obtained at a high price and as a great curiosity. She died unmarried in 1682.

Maria Sibylla Menan was born at Frankfort in 1649. She studied under Abraham Mingon, and owed to him great neatness of touch and delicacy of coloring. She painted insects, reptiles, flowers, and plants from nature with careful study and exact observation; she was indefatigable in the pursuit of her art, and finished an innumerable quantity of designs; she frequently used water-colors on vellum. She drew frogs, ants, serpents, and spiders after nature with truth and exactness, and represented flies and caterpillars in all their styles of development. A work by her, called "The Wonderful Transformation of Caterpillars," a quarto volume, with copper-plate engravings executed by herself after her own drawings, was published by her in 1679. Moreri says she even voyaged to Surinam, in 1699, in order to paint correctly the inferior animal life of that region, and after her return to her own country published two volumes of engravings from her designs; these were well known to the curious in such matters, and were entitled "*Metamorphosis Insectorum Surinamensium*, etc.; the text by Gasper Commelin, from the manuscript of Madame Menan." Our readers will perceive that this extraordinary woman was not only an excellent artist but also a valuable contributor to natural history. Her greatest work was the "History of the Insects of Europe, drawn from Nature and explained by Maria Sibylla Menan." It included an account of the insects in all their vital stages, of the flowers they preferred, and the plants upon which they subsisted. Her pursuit of knowledge was terminated only by her death in January, 1717.

Elizabeth Neal is mentioned in De Bie's Golden Cabinet, in 1662, as residing in Holland, and painting flowers so well that she was likely to rival Gerard Zeghers, who flourished at Antwerp about the middle of the seventeenth century.

Joanna Katerina Block was born at Amsterdam in 1650, and early in life learned music, embroidery, glass engraving, and moulding in wax; she also painted well in oils, and was an excellent copyist. She executed in cuttings of white paper, in a wonderful manner, portraits and figures and scenes from nature. The Elector Palatine offered one thousand florins for three small cuttings by this artist, but the offer was not considered liberal enough; for a trophy of the arms of the Emperor Leopold I. of Germany she received four thousand florins. She executed many portraits; her style was neat, clear, and decided, and her cuttings placed upon a dark back-ground produced the effect of fine engavings.

Rachel Ruysch was born at Amsterdam in 1664. Her master was Wilhelm Van Aelst, and Wornerm places her among the best artists of her age. She painted fruits and flowers with great perfection and rare fidelity to nature, and the butterflies and insects which she introduced into her pictures were admirably executed. Her coloring was cool, like that of her master, but rather darker and heavier; she was not so successful in arranging groups as in painting single flowers; these were beautifully drawn and executed. Her remaining works are not numerous; two remarkable ones exist in the Hague museum, the smaller of a tone peculiarly soft and clear, and the larger exhibiting a rare warmth and harmony and a liberal tenderness of treatment. There are four beautiful pieces by her hand at Amsterdam, two at the art gallery at Munich, of masterly finish; and seven of her best productions are preserved at the château of Wilhelmshöhe, near Cassel. In 1701 she was elected a member of the Academical Society of Haye; and in 1708 the Elector John of Pfalz appointed her his court painter, and conferred much honor and wealth upon her. She died in 1750.

Anna Wasser was born at Zurich in 1679, and received a fine early education; evincing a strong taste for art she was placed under the care of Joseph Werner, at Rome, and taught from the best models; the coloring and correctness of a copy of a Flora finished by her at the age of thirteen was astonishing. Possibly Fuseli may have alluded to this early effort when he so highly praised an oil painting in his possession said to have been produced by her at that age. She applied herself to miniature painting with complete success, her manner and execution gaining for her a well-merited reputation. Her fame was established in Germany by the correctness with which she reduced from large paintings to miniatures the portraits of the duke of Wurtemburg and his sister the Margravine Von Durlach. She had a fine taste and good coloring; and painted some pastoral pieces with great delicacy and harmony and fine originality. She died in 1713.

Henrietta Wolters, a celebrated Dutch artist, was born at Amsterdam in 1692. Her first instructor was her father, Theodore Von Pee, and she was improved by some of the best native artists, and she finally became the pupil of Christopher Le Blond, and painted portraits after his style with great reputation. Peter the Great sat to her for his portrait, and was desirous to secure her services, but she refused to leave her own country. The king of Prussia also endeavored to persuade her to attach herself to his court; she declined his generous proposals. A copy of a St. Sebastian, after Vandyck, greatly enhanced her reputation from its correct outlines, its perfect imitation of coloring, and its freedom of touch. She died in 1741, after having secured to herself fame and wealth, as well as the respect and esteem of her companions in art.

Anna Deyster was born at Bruges in 1680, and was the pupil of her father Lewis Deyster, whose works greatly resembled Vandyck's. She excelled in landscapes; and in the copies of her father's pictures her imitation was so close as almost to defy detection. She abandoned art for the manufacture of organs and harpsichords in her later years, and died in extreme poverty i n1746.

Maria Verlst was born in 1680, and, like the preceding artist, studied under her father Herman and uncle Simon Verlst. She painted with great spirit and delicacy, and expressed in her portraits the mental qualities as well as the physical features of her subjects. She was highly accomplished in music and the languages. She died in 1744.

Maria Angelica Kauffmann was born at Chur, in the Grisons, in 1743. She first painted under her father Joseph Kauffmann, an artist of mediocrity; but her style was formed by a close study of the best Italian masters in their own country, where she lived early in life, and again permanently settled after a visit to England. While in London she gained astonishing popularity by her portraits; of these there is one of the duchess of Brunswick, sister of George III., at Hampton Court, and another of herself in the Munich gallery; its warmth and clearness render this one of her best works. Later in life she devoted herself chiefly to historical subjects; her peculiarities were an easy though superficial composition, a graceful action which was not materially marred by monotony, a warm and blooming coloring somewhat crude, and an agreeable execution, marked with the rather vapid sentimentality of her age. A very characteristic work is in the National gallery—Religion surrounded by the Virtues. In the Vienna gallery are two of her best pictures, Arminius welcomed by Thuselda after a Victory, and the Lament for Pallas, from the Æneid. At Burleigh House, the seat of Lord Exeter, some fifteen of her works are preserved, exhibiting a complete resumé of her manner. She also executed a series of etchings, thirty-one in number, chiefly heads and half lengths, which show much skill and some delicacy of feeling. The celebrated Abbé Winckelmann, in a letter to Franck, in 1764, thus speaks of her: "I have just been painted by a stranger, a young person of rare merit. She is very eminent in portraits in oil; mine is a half-length, and she has made an etching of it as a present to me. She speaks Italian as well as German, and expresses herself with the same facility in French and

English, on which account she paints all the English who visit Rome. She sings with a taste which marks her among our greatest *virtuosi*. Her name is Angelica Kauffmann." She was a favorite friend of this enthusiastic writer; and she herself cannot be denied the praise of having forwarded the progress of modern art without in any degree departing from her natural feminine reserve and purity. Raphael Mengs says that her sex could justly be proud of her. She died in 1807, at Rome, and the members of the Academy of St. Luke assisted at her funeral; her latest pictures were borne after her body to the tomb in the Church of St. Andrea della Fratte, and her bust was placed in the Pantheon.

With our notice of this admirable woman and talented artist we close our sketch of the members of the schools of art which had, at this time, reached a high degree of development in spirituality in the countries of middle Europe. The master-workers had passed away, but the influence of their genius still pervaded all the forms of art; ideality had replaced conventionalism and prepared the way for the embodiment of nature, and the establishment of a healthy tone of sentiment, combined with a careful and conscientious execution.

The confirmation of a national style in the British school of art is of comparatively recent date, scarcely a century ago; but Walpole cites the time of Henry VIII. as the period when the arts first received liberal encouragement in England. Before that time the remains of painting are meagre and scattered, consisting chiefly of heraldic designs, a few portraits, and some poorly-authenticated paintings. Walpole describes several works of this age at length, and attributes to them considerable merit.

Susanna Horneband, painter in miniature, was invited to the court of Henry VIII., and remained in England until her death. We have not found any traces of her works, but we presume they must have been meritorious in order to challenge attention in Holbein's time. Our readers will readily recall Hans Holbein, portrait painter to Henry VIII.; his

genius gave an impetus to art, and the age immediately succeeding his was marked by a decided improvement in style.

The reign of Elizabeth was a golden one for literature and art, not so much from the queen's personal liberality as from the wealth and munificence of the country. However, we find among the payments made by Elizabeth's treasurer of the chambers, one of forty pounds to Levina Tirlinks, the painter of a fine card picture of the queen.

During the reign of James I. the arts were undisturbed by that monarch, who was, to quote Hayley's quaint "Epistle to Romney":

> "———both for empire, and for arts, unfit,
> (His sense a quibble, and a pun his wit,)
> Whatever works he patronized debased,
> But hap'ly left the pencil undisgraced."

His nobility retained the luxurious tastes of Elizabeth's time, and art was thus fostered, until, in the reign of Charles I., it burst into full flower. His majesty was a true patron of art, "a scholar, a man of taste, a gentleman, and a christian. The art of reigning was the only art of which he was ignorant."* During this reign Mrs. Anne Carlisle was much admired for her beautiful miniature copies of the Italian masters. She was highly in favor with Charles I., who, according to Graham, presented to her at one time, in connection with Vandyck, five hundred pounds' worth of ultramarine; from this Walpole argues she must have painted large pieces, as painting in miniature would take a long time to use such a quantity of coloring. Sanderson mentions "that worthy artist, Mrs. Carlisle;" and Vertue speaks of many of her pieces in the possession of Lady Coterel. She died in 1680.

Cromwell was not unkindly disposed towards art, but the puritanical fanaticism of the interregnum saw idolatry in painting, and the gratification of carnal pride in architectural display; and wit and learning were considered odious to the Holy Spirit.

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* Gilpin's "*Western Tour.*"

With the Restoration came in again the dominion of art, but it was unfortunately accompanied by a total lack of taste. Fuseli has characterized the style of portrait painting in this and the succeeding age as follows: "It was reserved for the German, Lely, and his successor, Kneller, to lay the foundation of a manner which, by pretending to unite portrait with historical painting, gave a retrograde direction to both for nearly a century. A mob of shepherds and shepherdesses in flowing wigs and dressed curls, ruffled Endymions, humble Junos, withered Hebes, surly Allegros, and smirking Pensierosas usurp the place of truth, propriety, and character." Roquet, a lively French writer, asks, "Is it easy to know the picture of your wife, or of any other lady, as the image of a pagan deity just escaped from Olympus, and riding on a cloud, or as an armed Minerva, or a Savoyarde?" However, this style, as absurd as it appears to us, had plenty of admirers in those days; and, indeed, not a very long time has elapsed since a portrait painter of New York attempted to secure immortality for himself and as many fair ladies as there are Muses, reminding us very strongly of a story told of one of the artists of the English school. A lady of rank had sat to him for her picture, and she had been very patient over the painting of her face, which was plain, but was anxious lest her beautiful arms and hands should not be well rendered; at this juncture the artist observed to her that he would not trouble her for another sitting. "But my arms and hands! you have not painted them?" cried the lady. "That is all provided for, madame," answered the artist complacently, "I always take those from my maid." "But her arms are not mine," protested the lady. "It does not matter; they are very good ones," answered the imperturbable painter; and the lady lost her own arms and received instead the same pair that graced all the artist's other portraits.

Mary Beale, who was born in 1632, was the daughter of Mr. Cradock, of Walton; she studied under Sir Peter Lely, and painted in oils and water-colors, and drew in crayons.

Her portraits were in the Italian style and were much in favor, and her manner was faithful to nature, but rather stiff and heavy. She was the equal of Jane Killegrew in poetry,* and her superior in art. She died in 1697.

Mistress Anne Killegrew was born in 1660; she gave early proof of singular powers, and before her untimely death seemed destined to become one of the brightest ornaments of a loyal and talented family. Antony Wood praises her in an excessive manner, saying that she was "a grace for beauty and a muse for wit," and that "nothing was spoken of her that she was not equal to, if not superior." Dryden bestowed extravagant eulogies upon her. Her poems, published by her father after her death, were embellished with a portrait of herself after the manner of Sir Peter Sely.† She drew portraits of James II. and Mary of Modena, and some pieces of still life and history. Some of her works were disposed of at Admiral Killegrew's sale in 1727. She died suddenly of small-pox, in 1685, and was buried in the chapel of the Savoy, with her father's Latin epitaph affixed to the wall above her tomb.

Walpole mentions Susan Penelope Rose, daughter of Gibson, the dwarf, and Mary More, under the reign of William III., as a moderately-fair portrait painter. Mary Benwell's portraits in crayon and oil were admitted to the Artists' and the Royal Academy's exhibitions from 1762 to 1783.

Patience Lowell Wright was born at Bordentown, New Jersey, and, like Benjamin West, established herself in England eventually; there she attained great fame as a modeler in wax. Although a British resident, she was an ardent sympathizer with the American revolutionists, and at last lost favor with George III. on account of her strictures upon his

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* Vide her "*Paraphrase of the Psalms of David.*"

† This book is extremely rare. Ballard gives an account of it in his "Memoirs of Learned Ladies." It contains Dryden's Ode to her, a long Latin epitaph by her father, and her Pastoral Dialogues, Four Epigrams, The Complaint of a Lover, and some "Lines upon the Saying that my Verses were made by Another."

course towards America. Her unswerving patriotism is said to have rendered inestimable information to our government in the trying times of the revolution. Her figures of the king and queen and the prominent personages of the time attracted great attention; a full length of Lord Chatham is preserved in Westminster. She died about the beginning of the present century.

The Hon. Anne Seymour Damer was born in 1748, and studied the art of sculpture under Ceracchi; she learned the technical part of her art, and the elements of anatomy from Cruikshank; and her manner was perfected in Italy, where she studied assiduously the pure Greek style. Her works were elegant, tasteful, and classical, and were widely and favorably known; as a woman, she was esteemed for many accomplishments and virtues.

Mrs. Grace, who lived about this time, was the daughter of a shoemaker, and had never received any regular instruction; yet, from her artistic labors, she realized a fine income, and laid aside over twenty thousand pounds sterling. Her pictures were admitted to the exhibitions of the Society of Artists, and in 1767 she painted the historical work, the subject of which was Antigonus Selencus, and Stratonice. She died at Homerton about 1786.

Maria Hadfield Cosway, although early evincing artistic tastes, was destined and educated for the cloister, but meeting with Angelica Kauffman in London, about 1770, changed the tenor of her life; and after her marriage to Richard Cosway, a favorite portrait painter of the time, she devoted herself to art. Her picture of the beautiful Duchess of Devonshire, as Spencer's Cynthia, gained for her a brilliant reputation. She was the friend of the Hon. Mrs. Damer, and hosts of others, talented and titled. After severe domestic sorrows she died in 1822, at Lodi, where she had established an educational institution for females.

In England the foundation of the academies of this and of the preceding century has greatly benefited art; and the

English now promise to become the rival of the French and German schools in general excellence. The Society of Painters in Water-colors was established in 1818 and 1832, and an exhibition of the works of female artists was opened in 1858; we are informed that some of its contributors are rapidly gaining enviable distinction.

Although no country can show a record of female artistic merit equal to that of Italy, we must always rank France first among the lands which have produced the most famous women of the world; whatever feminine excellence was wanting in art in the latter was more than abundant in literature, and even in science. During the sixteenth century Isabella Quatrepomme flourished as an engraver on wood. Strutt, giving Papillon as his authority, says that she was a native of Rouen, and cites as one of her works the frontispiece to an old calendar, representing a figure of Janus, executed about 1521, and marked with her monogram, an apple bearing the figure four.

In the next century, although the general influence of prominent women was pernicious, many of pure intellect and genius flourished; their progress in art was limited. The best female artist of this age was Elise Sophie Chéron. She was born in Paris in 1648, and was the daughter of Henri Chéron, an artist in enamel; observing her passionate fondness for art, he instructed her in design and coloring. She soon gained considerable eminence, especially in portraits; her works were elegantly disposed, well colored, finished, and of striking resemblance. She had a talent for historical subjects, and D'Argenville says she painted many of her portraits in character. According to Pilkington, she was admitted to the Academy of Painting in 1672; the Academy of Ricovrati, at Padua, also conferred membership upon her in 1699. She was a good poetess, and acquired much skill in music. Louis XIV. bestowed upon her a pension of five hundred livres. She died in 1711, and was buried in St. Sulpice.

The famous Madame de Pompadour engraved small pic-

tures from Boucher, and a set of sixty-three prints after the works of Gay. The reign of Louis XVI. gave birth to great female merit; and the revolution brought forth heroines. Among the artists of this century we notice Mlle. Collot, who assisted her husband, Falconnet, on his statue of Peter the Great; she also executed a fine bust of the same czar. Marguerite Gérard, the sister and pupil of Fragonard, painted charming scenes from domestic life. The tender and emotional style of Greuze had many female followers; and David was not without excellent imitators in his later age. We have in this age the names of several portrait paintresses of merit, Kugler, Charpentier, Chapet, Brugère, Benoit, and others; the mother of Horace Vernet, the wife of Tardieu, and the daughter of Hortemels, were all successful engravers; but the two female artists who best represent the French school are Adelaide Vincent and Louisa Le Brun.

Adelaide Vertus Labille was born at Paris in 1749, and pursued the study of art under J. E. Vincent, of Geneva, the father of her second hushand; her instructor in pastel painting was Latour, and her portrait of the sculptor Gois in this style won the Academy's prize. She was elected a member in 1781. She was court painter and an ardent royalist, and the destruction by the revolutionists of her picture of the king's brother, as Grand Master of the order of St. Lazarus, caused her much chagrin. She died, surrounded by admiring friends, about 1803.

Marie Louise Elise Vigée Le Brun, one of the most celebrated women of the eighteenth century, was born at Paris in 1765. Her early talent for art was fostered by her father, and her first masters were Briard, Davesne, and Joseph Vernet; and her success was somewhat marvellous. She married Le Brun, a connoisseur in art, during the reign of Louis XV. and a most unhappy marriage it proved to be. She was admitted to the Academy in 1783, and stood so high in public favor that, upon an occasion when La Harpe thus alluded to her, in a poem recited before the Academy:

"*Le Brun, de la beauté le peintre et la modèle,*
Moderne Rosalba, mais plus brillante qu'elle,
Joint la voix de Favart au sourire de Vénus,"—

the entire assembly, including royalty, arose and greeted the fair artist with unbounded applause. Among her associates were numbered the nobility of the land, and men and women of the highest genius. On the eve of the revolution she escaped from France by taking advantage of the amnesty extended to artists, and her subsequent wanderings proved to be rather a triumphal progress than an exile. She returned to Paris under the restoration of the Bourbons, and finally died at Monly in 1842. Her literary efforts were highly creditable. With the fair Le Brun we close our record of French female artists, and regret that the scope of our article does not permit us to give some details of the life and works of Rosa Bonheur, the greatest of her sex in art; and also of "the good woman and great artist," Felicie de Fauveau, who replied to her friends, when they remonstrated with her against her profession, adopted for the support of her family: "*Sachez qu'un artiste tel que moi est gentilhomme.*"

We cannot take leave of our subject without calling the attention of our readers, particularly those of the sex whose chroniclers we have been, to the influence which art has always exercised upon the people by whom it has been fostered. Its beneficial effects have not depended upon the establishment of schools, but upon the cultivation of nature; and where nature predominates, there art exercises its most potent sway. Its lofty mission is to soften and inspire the heart; to recall the pure and gentle thoughts of youth and innocence by reproducing scenes best fitted to summon up those memories; to fill the soul with high aspirations by depicting those deeds of heroism and virtue which the historian's pen has recorded in words, but which rise before us in beauty and majesty when clothed by the painter's art in the semblance of reality. The poet touches the heart with his sympathetic lines, but the artist stirs the soul with the lifelike creations of his pencil.

And even if no direct moral effect follows the impression which we receive from a well-executed and striking picture, we can not be insensible to an indistinct sensation of pleasure gradually pervading the mind. We are soothed without perhaps knowing the cause of our quiet, but we are none the less refreshed by the momentary calm. Whether the character and expression of a picture appeal to the emotional nature, or whether the spiritual part be affected by ideal perfection, we equally admit the power of the pencil and the genius which directed it. By the contemplation of a perfect work of art the generous emotions of the heart are aroused, the nobler impulses of the soul are awakened, or the perturbation of the mind sinks to rest, and the feelings which most embellish man's nature are exercised. No true artist will ever appeal to that inherent taint of vice which lurks in almost every human heart; rather the opposite extreme will be sought, and satisfaction will arise only in proportion as the work approaches the standard of truth and purity.

There is much in these reflections which appeals specially to the feminine nature, and we do not know of any more modest and delicate mode of elevating morality and advancing the higher interests of humanity than by the conscientious pursuit of art. It calls for no masculine vigor, no unnatural diversion from the sphere of grace and refinement from which we trust no true woman desires to depart; its study cultivates the ideas of truth and beauty, and its effects are highly conducive to moral harmony. We believe that the women of this and of future ages will give allegiance to its gentle power, in a manner in no way unworthy of their illustrious sisters, whose virtues and merits we have thus briefly recorded.

ART. II.—1. *An Inquiry into the Origin of the Discoveries attributed to the Moderns; wherein it is demonstrated that our most celebrated philosophers have, for the most part, taken what they advance from the works of the Ancients; and that many important truths in religion were known to the Pagan Sages.* By L. DUTENS. London. 1769.

2. *Histoire de l'Astronomie Ancienne, depuis son origine jusqu'à l'établissement de l'école d'Alexandrie.* Par M. BAILLY. Paris. 1781.

3. *Manners and Customs of the Ancient Egyptians; including their private life, government, laws, arts, manufactures, religion, and early history.* By Sir J. GARDNER WILKINSON, F.R.S. London. 1841.

4. *I monumenti dell'Egitto e della Nubia, dal* DOTTORE IPPOLITO ROSELLINI. Tomi 3. Pisa. 1832.

MUCH interest has of late been excited by popular lectures on the lost arts; but sufficient attention has not been devoted to its kindred topic—the Lost Sciences. The reason of this has probably been the more abstruse nature of the subject, requiring for its elucidation different habits of thought and more profound investigation. It is comparatively easy to discourse of the beautiful remains of ancient art found in the old world, and especially in the valuable museums of Europe,—the frescoes, the pottery, the curiously-moulded objects of bronze, terra-cotta, glass, and the like; the ductility of Damascus steel, the intensity of color in the Egyptian stuccoes, and in the stained windows of the middle ages, the microscopic inscriptions on bricks and signet rings, and the exceeding fineness of Dacca muslin and mummy-cloth.

All this appeals directly to the organs of perception, is easily comprehended, and when an accomplished orator takes the matter in hand a large fund of instructive entertainment is afforded to an indolent audience; or, perhaps, it would be fairer

to say, to a large number of persons who have not had the time, the requisite education, or the needful opportunities to search out such information for themselves. Much has to be taken on trust by those who are so situated; for it falls only to the lot of the wealthy few to visit Egypt and the far East, and to study the numerous collections of antiquities which abound in Europe, especially in Rome. But with regard to the sciences known to the ancients, it is competent to the man of leisure and education to study the subject through the medium of the records of the past and the subsequent researches and discoveries of travellers, antiquaries, and explorers like Champollion, Layard, Rawlinson, Bunsen, Lepsius, Müller, and a hundred other gifted men, who have devoted their talents and energies to explaining and illustrating them.

Avoiding, therefore, the hackneyed themes of ancient architecture, manufactures, mechanical appliances, and inventions, we propose to take a cursory view of the condition of the sciences of astronomy, geography, mathematics, optics, acoustics, pneumatics, hydraulics, ærostation, navigation, chemistry, medicine, and philosophy among the ancients, with a view of noting, first of all, what has been "lost," and, secondly, to what extent modern science is indebted to them.

Modern science, properly so called, is of comparatively recent origin, dating back only to the introduction of the inductive philosophy advocated by Lord Bacon and subsequently adopted throughout the civilized world, but taught many centuries previously by Aristotle. It is, therefore, not much more than two hundred and fifty years old. What preceded it, during the middle ages, was mostly empiricism, falsely called science, and very far removed from the truth. But there is this difference between our mediæval progenitors and too many of us in the present day, viz., they had the most profound reverence for the *names* of Aristotle, Galen, Celsus, Hippocrates, Plato,

Pythagoras, and the other sages of the ancient world; while we have a tendency to sneer at them and to conceive the old Egyptians, Persians, Greeks, and Romans as being little better than barbarians. How unjust this opinion is will be apparent to any one who has studied the subject. They had not the light of christianity, and their morals will not bear comparison with the Christian standard; but they paved the way for the present progress of the human race in material power, and this generation is indebted to them in more ways than it is generally credited. They produced men of transcendent genius in every branch of human development; and it really becomes a question whether the moderns have equalled them in many of their productions of science and of art.

We find sufficient evidence as to their proficiency in astronomy; and the superiority of the moderns over them in this science is due rather to their mechanical appliances and the perfection of their instruments of observation than to their superior genius. That the ancients had means of making accurate observations, however, is indisputable, although they are unknown to us. Thus, the pyramids of Egypt are built exactly facing the four cardinal points, north and south, east and west.* If the Egyptians were unacquainted with the magnet, how was this done? How could they draw a meridional line? Eratosthenes of Alexandria ascertained, by some means with which we are not fully acquainted,† that Syene, the most southern of the cities of ancient Egypt, was situated on nearly the same meridian as Alexandria; and by measuring the distance between the two cities he ascertained the length of an arc of the meridian. The moderns have not added anything to his method, although it has been long known to them;‡ but they have more perfect instruments to enable them to ascertain the longitude. The Chaldeans ascertained that the earth performed a spherical revolution on

* Bailly, p. 176.

† But see Laplace's *Précis de l'histoire de l'astronomie*, p. 34.

‡ Macrobius' "*Incerti auctoris*," *etc.*, vol. i, p. 219.

an inclined axis,* although there is no record of the mode by which they arrived at the conclusion; it is doubtful if they were acquainted even with the gnomon, the simplest of all instruments of observation. Epigenes says that in his time, shortly before that of Alexander the Great (B.C. 330), observations of the eclipses which had taken place for seven hundred and thirty years had been found recorded on columns of brick at Babylon.† Many of these observations have since been verified; but in order to be at all valuable to succeeding astronomers, they would require to have been accurate as to time: yet if there then existed instruments for measuring time, those ancient shepherds must have anticipated at least the Alexandrian philosophers who used the clepsydra, or water clock, by some hundreds of years, and the invention of chronometers by more than three thousand years.

At a very early period the length of the year was approximately ascertained. At least sixteen hundred years before our era the Egyptians, by attentively watching the heliacal rising of the Dog-star, discovered that the year consisted of 365¼ days, whence they formed their Sothic cycle of fourteen hundred and sixty-one years; but the Chinese attained to still greater accuracy by combining the solar year with their common lunar year of $364\frac{3}{9}\frac{1}{4}\frac{3}{0}$ days, whereby they formed the period of four thousand six hundred and seventeen years as the period when the sun and moon would occupy exactly the same relative positions. Now, in the absence of such mathematical instruments as we possess for the purpose, they had means for conducting and recording their observations which did not come down to us until recent times; and it is evident that their ingenuity and patience were worthy of high honor.‡

Their observations were carried on for centuries. Their accuracy may be judged of from the fact that, eleven hundred

* Bailly, p. 48.

† Ibid, pp. 144–5.

‡ Duhalde's *Hist. of China*, vol. i, pp. 85–109.

years before our era, careful observations, by means of the gnomon, of the meridional altitudes of the sun were made at Loyang, in China, by which it was ascertained that the obliquity of the ecliptic was 23° 54′ 3·15″, which perfectly agrees with the theory of gravitation. Laplace considers this extraordinary accuracy as an indubitable proof of the authenticity of these ancient Chinese observations;* the mode by which they were then conducted has not been preserved by the Chinese. They once had an extended series of tables of eclipses; but all their ancient records of astronomy and other sciences were destroyed about two hundred and forty-six years before our era by the blind fury of one of their emperors,† and after that time they have neglected astronomy. They employed instruments of copper, the nature and construction of which are not now understood, in making their observations and calculations; they also employed gnomons and clepsydras,‡ and they constructed armillary spheres and celestial globes. They determined the latitude of cities by the shadow of the gnomon, and the longitude by eclipses of the moon. However, it appears that after the eighth century of our era all knowledge of the science was lost in China. But in India it made astonishing progress. From tables bearing date the 21st of March, A.D. 638, it appears that the longitudes of the sun and moon were accurately determined, and the length of the solar anomalistic year was estimated at 365 days 6 hours 12 minutes 36 seconds, being only 1 minute and 15 seconds too much.‖ The Indians professed to carry back their tables so far as three thousand one hundred and two years before Christ. Bailly contends that§ there existed in India prior

* *Précis de l'histoire de l'astronomie*, p. 11. "Cet accord remarquable ne permet pas de douter de l'authenticité de ces observations."

† Bailly, p. 127. ‡ Laplace's *Précis*, p. 9.

‖ See Bailly's 4th Book on the subject generally.

§ "Et comme les Indiens pratiquent sans inventer ni perfectionner rien, il s'ensuit qu'ils ont reçu cette manière de compter, avec les methodes dont ils font usage, d'un peuple plus ancien qui en était l'inventeur.—*Histoire de l'astronomie*, p. 110.

to that period an astronomy hardly yielding in accuracy to that which modern science has established on the theory of universal gravitation. In this view he is supported by Playfair; but he has been controverted by the French astronomer, Delambre, who disputes the possibility of proving the accuracy of those ancient Indian records by the method of tracing backward from our own tables. Nevertheless, it is impossible to deny that these pre-historic astronomers had, by some means unknown to us, discovered methods of determining with considerable accuracy the longitude of the sun and moon, the length of the year, the obliquity of the ecliptic, and the equation of the centre. Their science, whatever it may have been, has long since degenerated into nonentity; and it has produced no effect whatever on that of Europe.

The astronomy of the Greeks is a matter of more interest to us, inasmuch as we have borrowed from them the names of the constellations, stars, and planets; also those terms which are used in the science, and those which designate the instruments employed in it, as well as the name of the science itself. In short, the frame-work of modern astronomy is Greek. Much of the astronomy of the ancient Greeks was guess-work or the offspring of the imagination, and not the result of observations. Of this character are the so-called discoveries of Thales, who taught that the stars were fire and that the heavens were a sphere of which the earth was the centre. He was unacquainted with instruments of sufficient delicacy and accuracy to enable him to make useful observations; yet it is asserted that he predicted eclipses and determined the positions of the stars which form the Lesser Bear in such a manner that navigators could guide themselves thereby. If he really did this, it must have been by means which have not been recorded. He also taught the sphericity of the earth and the obliquity of the ecliptic.* Pythagoras taught that the moon received her light from the sun; and Anaxagoras truly explained the cause of eclipses. Pythagoras

* Laplace's *Précis*, p. 23.

also taught that the earth was a planet revolving round the sun,* but it was reserved for Copernicus to demonstrate the fact. Nicotas of Syracuse maintained that the apparent motion of the stars arose from the diurnal rotation of the earth on its axis.† Meton established "the golden number" or Metonic cycle of two hundred and thirty-five lunations, or six thousand nine hundred and forty days, being nearly equal to nineteen years, as the period when the sun and moon occupy again relatively the same position with regard to the stars.‡ This cycle has ever since been the basis of modern calendars.

The discoveries made by Hipparchus in reality laid the foundation of modern astronomy. It will be sufficient to notice his discovery of the eccentricity of the sun's orbit, the acceleration of the mean motion of the moon, and its erection and the precession of the equinoxes, to show how much modern astronomy owes to him.‖ Geography, also, is indebted to him for introducing the system of fixing the position of places on the maps by means of their latitudes and longitudes.§ Yet all this was for a time lost, for the taste for science withered away under the despotism of Rome and the inroads of barbarians. The Arabians or Saracens produced some splendid astronomers, who greatly improved the instruments in use, and corrected the Greek observations. Their own observations were made in a much more accurate manner than those of the Greeks, and they invented several short mathematical processes whereby long calculations were considerably abridged. They also improved the catalogue of the stars which had been made by Hipparchus. But they did little in regard to the theory, and thus the part which the Arabs played was rather that of handing down to posterity, in another form, the discoveries of their predecessors.¶ What they did discover will be alluded to further on. From their time to the arrival of the science in the

* Sir G. C. Lewis' *Historical Survey of the Astronomy of the Ancients*, chap. ii, sec. 17.

† Cicero's *Opera*, vol. iv, p. 39, edit. Bipont. ‡ Bailly, p. 226.
‖ Laplace's *Précis*, pp. 35, 41. § Ibid, p. 41. ¶ Ibid, p. 60.

fifteenth century astronomy received no accessions ; it became a thing of the past, to be in a manner rediscovered by Regiomontamus and Copernicus.

The science of geography seems to have been very defective among the ancients, as must necessarily have been the case when there were no methods of accurately determining the latitude and longitude. Still, they were acquainted with places and routes which lay for centuries unknown to Europeans ; some of them are only now being explored ; such are the routes from India to Thibet and from Birmah and Pegu to China, which have been in use from the earliest ages by the natives. The ancient geographers were acquainted with routes from Egypt to Abyssinia and the centre of Africa, and across Mesopotamia to Armenia and Central Asia, of which nothing but obscure tradition remained in the middle ages. The exploits of Marco Polo and Sir John Mandeville in penetrating from Europe to China and India in the thirteenth century were looked upon as marvellous, and their narratives were received with incredulity, just as the travels of Bruce in Abyssinia were at the close of the last century. These men, in fact, discovered the countries they visited, although they had been well known to the ancients. The Phœnicians, in the year B.C. 610, circumnavigated Africa, starting from the Red sea and ending at the mouth of the Nile ; yet Vasco de Gama received the honors of a discoverer from sailing round the Cape of Good Hope to the Indian ocean.

It has been contended that the Phœnicians anticipated Columbus two thousand years and discovered America, and, indeed, the evidence in support of such a view is stronger than is generally supposed. Niebuhr compares the primitive astronomy of Europe with that of America, and therefore supposes the latter continent to have been discovered at a remote period.* The story of the invasion of Africa and southern Europe by a prodigious army from across the Atlantic from an island "larger than Libya and Asia put together," as given in Plato,† has been

* *History of Rome*, vol. i, p. 281. † *Timæus*, sec. 7.

generally ridiculed, even by erudite men of the most recent times* yet the researches of Aubin, Brasseur de Bourbourg, and others in Mexico, and the discovery of the true method of deciphering the ancient Mexican records,† go far towards proving that there once existed regular intercourse between America and Europe. Without adopting all the theories of M. de Bourbourg respecting the extent of the American continent prior to the Deluge, by which he attempts to establish as a fact that Plato's Atlantis was a reality, the existence of customs and beliefs among the ancient inhabitants of Central America, almost identical with those of Egypt, are quite sufficient to found a claim for serious consideration of the subject.

At a very remote period the Malays were skilful navigators, doing in the East what the Phœnicians did in the West, visiting foreign lands far and near. They possessed means of navigating the ocean, which must have been connected either with a knowledge of the mariner's compass or of astronomy. There is reason to believe that the Chinese were acquainted with the magnetic needle from a very early age,‡ hence it is probable that the Oriental sailors knew of it also and used it. They also steered by certain constellations, as did the Greeks and the Phœnicians, and undertook voyages of immense length. Thus the Malays conquered Madagascar and settled there,‖ and the Arabs traded with the island from the remotest ages, as far as tradition can carry one back. The works of Ptolemy and Strabo, the eminent geographers of ancient times, show that they had tolerably accurate conceptions as to the sources of the Nile, for their statements have been in great part corroborated by recent explorers.§ We have not yet mentioned the Periplus of Hanus, nor the discoveries of Imilco, which were made in the fifth century before the Christian era. Hanus sailed from Carthage to explore the coast of Africa and to plant colonies

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* Martin's *Etudes sur le Timée.*

† Brasseur de Bourbourg's *Quatre Lettres sur la Mexique.*

‡ Duhalde's *Hist. of China*, vol. ii. ‖ Sibree's *Madagascar*, c. 1.

§ Burton, Grant, Speke, Dr. Behe, and others.

there. Imilco explored the Atlantic and visited Ireland and the Ostrynnian islands off the coast of Spain.* Pytheas, a Greek navigator, who has been accused of mendacity, asserts that he visited an island called Thule, six days' sail to the north of Britain, near the Frozen sea, where six months of the year were light and six dark, without distinction of day and night.† There has been much dispute as to the locality here mentioned, whether it was Iceland or Greenland or the Shetland islands; some even think the whole story a fiction, but it shows that the ancients had some correct ideas about the polar regions.

From the days of Ptolemy until the revival of letters in Europe little was done for geography. The calamities which overwhelmed the Roman empire were followed by a general intellectual darkness, which settled down on the world and extinguished even the imperfect knowledge possessed by the ancient geographers. While barbarous nations poured in from several quarters, art and science ceased to be cultivated. The union by which the Roman power had bound together mankind being now dissolved, Europe was divided into small and independent, and for the most part hostile, communities, which had but vague conceptions respecting the situation of each other, while no intercourse subsisted between their members. With regard to remote regions all knowledge was lost, their situations, their commodities, and almost their names were unknown.‡ Several ages elapsed before this dense ignorance was dispelled. The crusades had vast influence in reviving the old intercourse between Europe and Asia which the Saracens and Turks had interrupted, and about the twelfth century of our era the Genoese and Venetians pushed their maritime expeditions into the Black sea. Geography then began to revive, but it is like a new science in its infancy, and the maps which were in use until within the last two centuries

* Lewis' *Historical Survey*, p. 454.

† Pliny, ii, 77; Lewis' *Hist. Survey*, p. 469.

‡ *Encyc. Britt.*, Art. "Geography."

were of the most imperfect and, very frequently, erroneous character; inferior to those of the ancients.

In two important branches of mathematics, viz., algebra and geometry, the ancients made great progress; but we are mainly indebted to the Arabians for our knowledge of the former, as well as for the numeral characters now in common use, and for the decimal notation. They fully appreciated the value of the sciences, and when all Europe was enveloped in the darkness of ignorance, they preserved from extinction the lamp of knowledge. They carefully collected the writings of the Greek mathematicans, translated them into their own language, and illustrated them with commentaries; otherwise those most valuable works would have perished, and Europe would have been compelled to rediscover for itself those lost sciences. It was through the medium of the Arabic tongue that the elements of Euclid were first introduced into Europe; and a part of the writings of Apollonius are only known at the present day by a translation from the Arabic, the Greek original being probably irrecoverably lost.*

But it is remarkable that, although the mathematical sciences were received with avidity and sedulously cultivated during a long period by the Arabians, yet in their hands they received scarcely any improvement.† It might have been expected that an acquaintance with the writings of the Greeks would have produced some change in their algebra, but it did not; their algebra continued nearly in the same state from their earliest writers on the subject to their latest. We can, therefore, only consider them as our benefactors in preserving for us the treasures of antiquity which would otherwise have been lost.

The science of algebra was then, for many ages, a lost science. The last great Greek writer on the subject was Diophantus, who lived about the middle of the fourth century after Christ. Fragments only of his works have come down

* Dunham's *Hist. of Spain*, vol. iv, p. 40.

† *Encyc. Britt.*, Art. "Algebra."

to us, but of thirteen books which he wrote on arithmetic only the first six and a portion of the last have been preserved. These fragments do not form a complete treatise on algebra, but they show that he possessed great skill in the particular branch of which he treated, and that he was able to solve determinate equations of the second degree.* This seems to have been the limit of the algebraic powers of the ancients. The celebrated Hypatia, of Alexandria, who fell a victim to the fury of the mob in that city in the beginning of the fifth century, wrote a commentary on the works of Diophantus, but it is now lost, as is also a similar work by her on the conics of Apollonius. We should have known nothing of Diophantus had it not been for the Arabs, and the discovery of his works in the Greek language, in the library of the Vatican at Rome, about the middle of the sixteenth century, where it had probably been carried after the capture of Constantinople by the Turks, A.D. 1453.†

Algebra was very little known in Europe until Leonardo, a merchant of Pisa, brought it and the Arabic numerals from Africa about the year 1200. He wrote a treatise on it, but even that was lost sight of and forgotten, until the middle of the last century, when it was discovered in the Magliabecchian library at Florence. Still, very little progress was made in the science for more than three hundred years, when the Italian mathematicians, Luca de Burgo, Paciolus, Ferreus, Tartalea, and Floridо took it up, and from that time it became a living science and gradually developed under the hands of successive masters to its present advanced state. To Vieta the science is especially indebted, for he introduced its application to geometry.‡

But not alone to the ancient Greeks and Arabs was algebra known. About sixty years ago English officers and explorers in India discovered that for many centuries the Hin-

* Diophanti's *Alexandrini arithmeticorum et de numeris multangulis*, with commentaries. Casper Bachet, Paris, 1621.

† See on the subject, generally, Bossut's *Histoire générale de Mathemattiques.*

doos had had an algebra of their own, and they translated a number of Hindoo and Persian manuscripts on the subject.* From these it appears that the Hindoos were much in advance of the Greeks. They had a better and more convenient algorithm; they could manage equations of more than one unknown quantity; they did more than the Greeks in attempting the solution of equations of a higher order, and anticipated the modern discovery of the resolution of biquadratics; they went far beyond Diophantus in their method for the resolution of indeterminate problems of the first and second degrees; and they applied algebra to astronomical investigations and geometrical demonstrations, in which they hit upon some matters which have been re-invented in modern times. These works excited much surprise and attention when published by the English translators, the general opinion as to the Hindoos having been that they were indolent sensualists, little given to severe exercises of the mind. It now appeared that they well understood the arithmetic of surd roots, and were aware of the infinite quotient resulting from the division of finite quantity by cypher; and that they had found a general solution of indeterminate equations, to as near an extent as was attained until the time of Lagrange (1767).†

From the researches of the English Orientalists‡ it appears that the great Hindoo algebraists flourished many years ago. One of the earliest of them, viz., Brahmegupta, lived in the seventh century of our era; another, Bhascara Acharya, in the twelfth, but the most eminent of them, Arga Bhatta, lived about the same time the Greek Diophantus did (A.D. 360). Their works went out of use along with the science, among the Hindoos, after the Mohammedan conquest, and algebra was no longer cultivated in India. It was lost for several ages. Is it

* Strachey's *Bija Gannita*; also, *Algebra, Arithmetic, and Mensuration*, from the sanscrit of Brahmegupta and Bhascara, translated by H. T. Colebrooke. London, 1837.

† But see Delambre, who speaks slightingly of Hindoo algebra in his *Histoire de l'astronomie du moyen âge*, Discours preliminaire, p. 18.

‡ See the writers before quoted; also, Bailly's *Astronomie Indienne*.

because the Hindoos inherited their algebra from some more ancient and inventive people, of whom no other than scientific memorials remain?

Geometry is another branch of mathematical science which disappeared from the world for awhile, to be, as it were, dug up and recovered some centuries later. What has been said of the part played by the Arabians in preserving the works of the ancient Greeks on algebra from destruction, applies also to geometry. They translated the writings of some of the Greek mathematicians into their language,* but made no additions to the science. The Hindoos, however, have some works on the subject of great antiquity, but they are remarkable for not containing demonstrations. They were acquainted with the celebrated proposition concerning the squares on the sides of a right-angled triangle, the discovery of which has been ascribed to Pythagoras; and they also knew the rule for finding the area of a triangle from its sides, which was not known to the early Greeks; that was first made known to the world by a Greek mathematician named Hero, who lived in the eighth century of our era. It appears, too, from the institutes of Akbar, that the Hindoos supposed the diameter of the circle to be to its circumference as 1250 to 3927, which is the proportion of 1 to 3.1416, and is more accurate than the determination of Archimedes, or, indeed, than any known before the sixteenth century. The Chinese made very little progress in geometry. It seems that they knew the forty-seventh proposition of the first book of Euclid earlier than the Greeks, but it remained sterile in their hands. They had no spherical trigonometry before the thirteenth century, and then it was not of native growth, but probably derived from the Arabians or the Persians. The Romans paid but little attention to the sciences, and, on the fall of their empire under the inroads of the barbarians, the European world was left in almost total darkness. This remark applies, therefore, to all

* Dunham's *Hist. of Spain*, p. 40.

the sciences known to the ancients, and, of course, to optics, of which we are now to speak.

There can be no doubt that glass was known at a very remote period. Lenses and spheres were used as burning-glasses. Globes of glass were used by the vestal virgins to kindle the sacred fire, and by surgeons to burn the flesh of sick persons when it required to be cauterized. These uses of glass are mentioned by Anthemius, Plato, Aristophanes, Euclid, Lactantius, Aristotle, and others among the ancients.* Claudius Ptolemy, the celebrated Alexandrian astronomer, wrote a treatise on optics,† which in time escaped the notice of philosophers, and remained unknown until 1816, when Delambre published an analysis of it from the manuscript in the Royal Library at Paris. This work treats of various forms of mirrors; the laws of reflection and refraction and of vision, and records many experiments on these and kindred topics. His theory of refraction was more complete than that of any astronomer before the time of Cassini. Galen, the Greek physician, also treated of optics, and discussed the principle of the stereoscope, the instrument now so popular. No improvement was made in the science in Europe for more than a thousand years after his death, but among the Arabians it received some important accessions. It was not until the time of Vitello, A.D. 1270, that the study of it was revived in Europe; it had then lain dead for twelve hundred years, and at that time the works of the Greeks and Arabians were lost or unknown.

It has been generally supposed that telescopes, microscopes, and spectacles were invented in Europe in the later middle ages, and the claims of Roger Bacon to the honor of inventing them have been advocated by several eminent writers. Yet when we read that Nero used a glass to enable him the better to see the gladiators in the circus,‡ and that the pirate Mauritius used to stand on the promontory of Lily-

* Cited by Dutens, chap. 10.

† *Opticorum sermones quinque.*

‡ Pliny's *Hist. Nat.*, lib. 37, c. 5.

bæum, in Sicily, and watch the ships come out of harbors on the African coast by means of an instrument which he carried, it is hard to believe that telescopes were known for the first time in the twelfth century of the Christian era. It is equally difficult to believe that microscopic lenses were unknown to the ancient Assyrians and Egyptians, when we find inscriptions written by those nations which are invisible to the naked eye.* Such could only have been engraved with the help of the microscope, or of an analagous contrivance, as described by Seneca. Yet all knowledge or remembrance of this instrument perished during the many convulsions which the East underwent. The conquest of Egypt by Cambyses, and the destruction by him of the Egyptian temples and monuments, appears to have been peculiarly fatal to science.†

With regard to acoustics, pneumatics, hydraulics, aeronautics, and other kindred physical sciences, the ancients seem to have possessed but vague notions as to the principles on which they were based, although they succeeded in producing some marvellous effects. Archimedes was acquainted with the fact that a body must remain suspended in a fluid denser than itself, and he laid down several other fundamental principles in hydrostatics.‡ Aristotle speaks of nature abhorring a vacuum, and treats of pneumatics. That the Greeks and the Egyptians understood some of the laws of acoustics, is evident from the mysterious awe they were able to produce in their temples and at their oracles by means of sound. Their attempts at the practical mastery of aeronautics were, however, miserable failures. They seem to have been fired with the idea of being able to find out the means of flying, in which they have been imitated by several moderns;

* Seneca's *Quæst. Naturæ*, lib. 1, c. 6.

† The state of optical science among the Greeks and Romans is best ascertained from Claudius Ptolemy's work, "*Opticorum sermones quinque.*" See also Smith's "*Optics.*"

‡ Περι όχουμένων, Marinus Ghetaldus, "*Archimides' promatus.*" But hydrodynamics was a science little cultivated by the ancients. The work of Julius Frontinus, "*De Aquæductibus urbis Romæ Commentarius,*" probably contains all they knew.

but in every case the fate of Icarus awaited the adventurer. The notions entertained by the ancients respecting the composition of the world might have suggested to them important hints for realizing the scheme of aërial navigation, but they advanced only a little way in the science. Perhaps there is not much to regret in the loss of what was known to them with reference to the physical sciences. Their philosophy was in a great degree conjectural. Modern science is based on experiment and induction, and it is owing to this that it has made such rapid and certain progress. It may even be believed that the darkness which overspread Europe during the early middle ages was beneficial to the human mind in throwing it back on its own resources, and in forcibly destroying its reliance upon the authority of a few great names like those of Hippocrates, Galen, and Aristotle. At the commencement of the fifth century of our era, the fate of the ancient philosophy and science was determined by the murder of Hypatia at Alexandria; not, indeed, by the mere massacre of that gifted and beautiful woman, but by the spirit of bigotry which caused it. After this cruel scene, intellectual stagnation settled upon the city which for seven hundred years had been the home of science, literature, and philosophy. And so things remained for more than two hundred years, until they were changed by foreign invasion. The Arabs broke the heavy spell of ignorance and fanaticism. "On the shore of the Red sea once more a degree of the earth's surface was to be measured and her size ascertained—but by a Mohammedan astronomer. In Alexandria the memory of the illustrious old times was to be recalled by the discovery of the motion of the sun's apogee by Albategnius; and the third inequality of the moon, the variation, by Aboul Wafa; to be discovered six centuries later in Europe by Tycho Brahe. The canal of the Pharaohs, from the Nile to the Red sea, cleared out by the Ptolemies in former ages, was to be cleared from its sand again. The glad desert listened once more to

the cheerful cry of the merchant's camel-driver, instead of the midnight prayer of the monk."*

We are, however, not disposed to place a very high value on the contributions of the Arabs to science.† They were not originators but conservators, as we have already remarked, and these opinions will clash with those of the admirers of Saracen sway in the East and in Spain. At the outset of their career they were mere fanatics, settling all things by the sword, and whatever truth there may be in the story of their burning the books of the library at Alexandria, for the purpose of heating the baths, there is nothing improbable in it from the character of the race. They were guilty of acts of far more atrocious character. In time, however, when the flush of conquest had ceased and the limits of dominion were reached, the character of the Arabians changed, and they became zealous cultivators of learning. In those days the chief physicians were Jews, and as the Arabians fraternized with them, they repaid the kindness of the conquerors by imparting to them their knowledge of medicine. The Emperor Constantine the Great suppressed the Asclepious or medical schools of the Byzantine empire, and after that the cure of the sick devolved upon unskilful persons, who had not been educated as physicians. The Jews and the Nestorian Christians, however, devoted themselves to the study of medicine, and became proficients in it. If it became a lost science to the Greeks of the empire, and was almost wholly unknown to the nations of Europe in the early middle ages (A.D. 500–1000), it was revived by the Arabs with extraordinary success. But they also brought to their studies a morbid desire for the marvellous, and were continually searching out the means for turning lead into gold, and for prolonging life indefinitely. They were constantly occupied with the philosopher's stone, the *elixir vitæ*, the powder of projection, magical

* Draper's *History of the Intellectual Development of Europe*, p. 241.

† Mr. Dunham seems to entertain a more favorable opinion of them.—*Hist. of Spain*, vol. iv, p. 40.

mirrors, perpetual lamps, and the transmutation of metals. They carried on experiments in secret places and caverns under ground, where they lighted their fires and worked with the alembic; and though they never succeeded in discovering what they were in search of, they discovered many things they were not in search of. They laid the foundation of experimental philosophy and science, especially of chemistry, and incidentally added much to the science of medicine.*

The invention of gunpowder has been generally attributed to Roger Bacon, who lived in the thirteenth century, but his discovery was but the re-invention of what had been known to the Greeks and Chinese centuries previously. Marsus Græ-tus, who lived in the eighth century, gives the composition of it explicitly.† He directs us to pulverize in a marble mortar one pound of sulphur, two of charcoal, and six of saltpetre; and he says that if some of this powder be tightly rammed in a long, narrow tube, closed at one end, and then set on fire, the tube will fly through the air; this is evidently the rocket.‡ The Arabs also had their explosive mixtures. Automatic fire was made from equal parts of sulphur, saltpetre, and sulphide of antimony, finely powdered and mixed into a paste with equal parts of juice of the black sycamore and liquid asphaltum, a little quick lime being added. And it was necessary to keep this material from the rays of the sun, which would set it on fire. They also discovered the strong acids, the credit of which has been given to Priestley, Scheele, and other modern chemists.‖ Djapar, in the eighth century, discovered nitric acid and aqua regia, and taught that metals, when calcined, increased in weight. This, again, is supposed to be a

* See a most able discussion of the whole subject in the *Encyc Brit.*, Art. "Medicine." Ferrera's *Histoire Générale de l'Espuña*, vol. viii, part xv, siecelo 16.

† Dutens, sec. 207. "Secundus modus ignis valatilis hoc modo conficitur R., lib. i, sulphuris vivi, lib. ii, carbonis salicis, salis petrosæ, vi. lib, quæ tria subtilissime terantur in lapida marmareo."

‡ Ibid, and *Opera Medica*, Joan Mesuæ, Venice, 1825.

‖ Dutens, sec. 203.

modern theory. Pharges, the great physician of Bagdad, in the ninth century, discovered sulphuric acid by distilling from dried green vitriol. He also suggested the preparation of pure alcohol by distilling spirits of wine from quick lime. Bechil, another Arabian chemist, discovered how to make phosphorus. These Arabs were well acquainted with the practical part of chemistry, and the operations of distillation, sublimation, filtration, and the like *

To Dr. Dalton has been ascribed the honor of advancing the atomic theory; yet this doctrine was taught by Democritus in the fourth century B.C. He asserted that all things were composed of invisible, intangible, and indivisible particles or atoms which, by reason of their configuration, combination, or position, give rise to the varieties of forms; to the atom he imputed self-existence and eternal duration.† How did it happen that this theory of Democritus was overlooked or else kept out of sight, while modern chemists were agitating the subject? We may ask the same question on another subject—the origin of mountains. Geology is quite a modern science, and has nothing to do with any one that has been lost. When it first attracted attention at the beginning of this century, its votaries were divided into two parties; the Neptunian, or those who attributed all geological phenomena to the action of water, and Plutonian, or those who attributed them to the action of heat or fire. Since that time various theories have been started as to the origin of mountains. Among others, that of Sir Charles Lyell has met with general acceptation. He may or may not be familiar with the works of Avicenna, the great Arabian physician, but he himself might have written the views which the learned Arab expressed on the subject. Avicenna lived in the tenth century, the darkest period of the middle ages; and this is what he says:‡ "Mountains may be due to two different causes; either

* Mesuæ, *ubi supra*

† *De atomis*; see *Vita et Philosophia Democrite*. Lyden, 1648.

‡ Liber 1, p. 103; Ed. per F. Paulinum. Venice, 1508.

they are effects of upheavals of the crust of the earth, such as might occur during a violent earthquake, or they are the effect of water which, cutting for itself a new route, has denuded the valleys, the strata being of different kinds, some soft, some hard. The winds and waters disintegrate the one, but leave the other intact. Most of the eminences of the earth have had this latter origin. It would require a long period of time for all such changes to be accomplished during which the mountains themselves might be somewhat diminished in size. But that water has been the main cause of these effects is proved by the existence of fossil remains of aquatic and other animals on many mountains."

To return to the sciences of medicine and surgery, we find that, at a time when they were wholly unknown in Europe, the Saracens had applied chemistry both to the theory and practice of medicine, in the explanation of the functions of the body and the cure of its diseases. They were acquainted with the circulation of the blood, which was taught by Hippocrates and Plato.* Nor was their surgery behind their medicine. They used the cautery and the knife without hesitation, and did not shrink from the performance of the most difficult operations. Albucasis, of Cordova, has left us ample descriptions of the surgical instruments then employed; and from him we learn that in operations on women the services of properly instructed females were secured. The Saracens translated and studied the works of Hippocrates, Galen, Celsus, and Aristotle, and many of their learned men wrote commentaries on them. Averrhoës composed valuable commentaries on Aristotle, A.D. 1198.† At this time the profession of physician and surgeon in all of Europe, except Spain, was exercised by barbers and quacks. The ignorant peasant resorted to a shrine when attacked by disease, and hoped that

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* Hippocrates' *De Circulatione sanguinis*. J. A. Vanderlinden, Leyden, 1659; Plato's *Timæus*: "την δε δη καρδίαν ἁπα τῶν θλεβῶν, καὶ πηγην τᾳ περι θερμνε κατα παντα τὰ μέλη σφοδρας αἱματος."

† Dunham's *Hist. of Spain*, vol. iv, p. 40 *et seq.*

he might be cured by a miracle. The remedies in vogue were mostly "old women's remedies," culled from herbs and from animal matter. Amulets, charms, and exorcisms were greatly relied upon; but the idea of consulting a really skilful and scientific Jewish or Arabian physician was looked upon with horror. Medicine was, for ages, a lost science to the bulk of the civilized world, nor can it be said to have assumed a really scientific form until within the last hundred years.

The knowledge to be derived from Jewish and Mohammedan sources was most religiously scouted by mediæval christians, who thus retarded their own progress for centuries and rendered it necessary for them to re-discover those sciences which they had either allowed to perish or helped to destroy. The expulsion of the Moors and Jews from Spain was a calamity from which that country has not yet recovered. Though victors on the battle-field, the Spaniards were but ignorant barbarians compared with those they expelled. The Moors were the first to build observatories in Europe.* The Giralda, or tower of Seville, was erected under the superintendence of Geber, the Arab mathematician, A.D. 1196, for an observatory. On the expulsion of the Moors from Spain in 1571, the Spaniards were so ignorant that they did not know what to do with this tower, so they turned it into a belfry !†

The Arabian astronomer, philosopher, and chemist—the latter is but a contraction of the Arab word *alchemist*—Alhazen, who flourished about A.D. 1100, anticipated many modern discoveries in science, but, for the reasons above given, his discoveries were lost to the world. They were quite numerous, and related to the theory of vision of colors, the refraction of light, the height and weight of the atmosphere, the principles of hydrostatics, the theory of gravitation, capillary attraction, specific gravities, and the successive development of organisms. He explained the weight of the atmosphere, and thus anticipated Torricelli. He very nearly anticipated Newton in the

* Ibid, vol iv, p. 41. † Ferreras, *ubi supra*.

law of gravitation, and many of the modern chemists in his tables of specific gravities, and he was before Owen and Darwin in affirming the development of man through successive stages of being.* The great Arabian astronomer, Ebu Junis, was the first who applied the pendulum to the measurement of time.

Enough has been said to show that the ancients had made considerable progress in the physical sciences, and it may be inferred that had this rate of progression been continued from where they left off down to the present time, we should have advanced very much further in every branch of knowledge than we have as yet done. But it has been ordered differently. Overpowering inroads of barbarians, Turks, Goths, Vandals, and Huns were permitted to desolate the civilized portions of the globe, and trample out all vestiges of literature, philosophy, art, and science. What was saved was concealed in remote monasteries or underground repositories, wherein many of the productions of the master minds of antiquity mouldered away and were forgotten. What was not accomplished by war and devastation was done by Christian superstition, ignorance, and bigotry. The Jews were looked upon as a race with whom it was a mortal sin to be on good terms; and the Arabs, Saracens, Moors, and Turks being all followers of Mohammed, were equally abhorred, and communication with them was avoided, except in Spain, where much mutual courtesy prevailed between Christian and Mahommedan. Add to this the long-continued political and religious wars of Europe during the middle ages, wherein whole cities were destroyed, provinces laid waste, libraries burnt, churches, colleges, convents, and public buildings pillaged, and philosophers persecuted, and we may well wonder not that so many arts and sciences became lost, but that any trace of them should have been preserved.

The condition of Europe during the tenth and eleventh centuturies was deplorable, while in the Saracen cities of Cordova, Seville, Granada, and Toledo men might walk, after sunset,

* *Opticæ Thesaurus, Alhazeric Arabis*, à Frederico Risuero. Basle, 1572.

for miles in a straight line by the light of the public lamps (seven hundred years before there was one public lamp in London), through streets solidly paved; while these Saracens had their marble palaces, their frescoed walls, their stained glass, vaulted roofs, their floors of mosaic and gold, their arabesques and paintings, their fountains, cascades, and flower gardens, their chandeliers and lamps, carpets, tapestry, couches, pillows, frankincense, music, and dancing, their whispering galleries, baths, hot and cold water service, and their magnificent libraries; while Southern Spain had its universities, colleges, and learned professors,* what was the state of things in the rest of Europe? The dwellings of the rulers of Germany, France, and England were scarcely better than stables, chimneyless, windowless, and with a hole in the roof for the smoke to escape through. The lower orders of the people could scarcely be said to have emerged from the savage state. They were unclean in person and benighted in mind, and they inhabited huts, in which it was a mark of wealth if there were bulrushes on the floor and straw mats against the wall. They were miserably fed on beans, vetches, roots, and even the bark of trees, and clad in garments of untanned skin, or, at the best, of leather—perennial in durability, but not conducive to personal purity—a state in which the pomp of royalty was sufficiently and satisfactorily manifested in the equipage of the sovereign, an ox cart drawn by not less than two yokes of cattle, quickened in their movements by the goads of pedestrian serfs, whose legs were wrapped in wisps of straw.† Serfdom or slavery in some form or other generally prevailed; the manners of the middling or upper classes were coarse and often brutal; their amusements partook of the same character. These were some of the results of the loss of the arts and sciences, literature and philosophy. It is astonishing that these should have disappeared so completely that even the

* Hallam's *View of the State of Europe during the Middle Ages*, vol. i, chap. iv; vol. ii, p. 484.

† Hallam's *View*, vol. ii, pp. 414–416, n.

memory of their existence was cherished only by a few superior minds; even the Emperor Charlemagne was unable to write.* It was as though a black pall had been cast over Europe during that *sæculum obscurum*, the tenth century.

Moral and mental philosophy were lost sciences, also, at the time we are speaking of. After the death of Boëthius, the learned commentator of Aristotle, the author of "The Consolation of Philosophy," who perished through the jealous fears of a Gothic king, and the closing of the schools of philosophy at Athens about the same time (A.D. 529) by the Emperor Justinian, Greek philosophy came to an end. What it had accomplished during the eleven centuries of its existence remains imperishably inscribed on the pages of history. Beginning with Thales and ending with Boëthius, it had sounded all the depths of speculation as to the nature and destiny of man, his constitution in relation to time and to eternity, and to external things. Many of these speculations of the great philosopher attained to great sublimity, but they can scarcely be said to have reached the dignity of a science until Aristotle introduced the inductive philosophy. The early Greek philosophers began by speculating on the origin of the world. Their reasoning failed, because it was founded on imperfect and erroneous observations. They allowed themselves to be deceived by appearances, and believed the earth to be flat and the sky convex. They thought there were only four elements—earth, air, fire, and water; and they sought to deduce all things from the operations of one of these. Thus Anaximenes of Miletus, and Diogenes of Apollonia, asserted that air was the first principle;† Thales held that water was;‡ Heraclitus taught that fire was;‖ Pythagoras soared far above these materialists when he brought forward the doctrine that number was the essence or first principle of all things. His disciples went so far, indeed, as to reason the world out of

* Hallam's *View*, vol. ii, p. 352 and n.

† *The Biographical History of Philosophy*, by George Henry Lewes, 6–8. ‡ *Ibid*, p. 4. ‖ *Ibid*, p. 69.

existence; they held that substance was nothing more than form and actually contained no matter; that it could have had no origin in time, and that its very existence was an illusion.*

One might easily fill a volume with these theories, countless in number and unsustained by logical deduction from experiment or observation, but it is sufficient to observe that the failure of them to account for phenomena of daily occurrence at last paved the way for the true method of investigation. Plato and Pythagoras, dealing in universals only, lived, as it were, in the clouds. It was reserved for Aristotle to reverse the system. While they descended from universals to particulars, he began with particulars and ascended to universals by induction; and his system was, in reality, the true beginning of science. Plato regarded universals or types as having an actual existence;† Aristotle asserted that they were mere abstractions of reasoning; from details he rose to a general conception; he was, in fact, a materialist, while Plato was an idealist.‡ While the theories of the latter were showy but unsubstantial, the hypotheses of the former were unattractive and erroneous; it could hardly be otherwise. A large and varied number of experiments are necessary to establish an hypothesis, and from a number of hypotheses a general law is deduced. Not having time or opportunity to make a sufficient number of observations and experiments, Aristotle failed in the application of his own principles.‖ But he has the immortal honor of having indicated the right path to knowledge, a hint which was subsequently acted upon by Lord Bacon and the philosophers of modern times.

After the closing of the schools of philosophy by Justinian, we hear very little of Aristotle's philosophy for more than five centuries. The true basis of all science which he had indicated was neglected. When the human mind began to shake off the lethargy which had so long deadened its faculties, we find

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* *The Biographical History of Philosophy*, by George Henry Lewes, pp. 6–8.

† *Ibid*, pp. 26–33.

‡ *Ibid*, p. 247.

‖ *Ibid*, p. 251.

the philosophers of the new era disputing about airy logical problems and metaphysical subtleties, which served no other purpose than to display the ingenuity of their propounders, but did not contribute to the revival of science. The scholastic philosophy of Abelard and his contemporaries, which at first grew out of dissensions on the doctrines of the church and the mysteries of religion, gave birth to the celebrated controversy between the nominalists and the realists. The latter thought that the general type of things had a real existence; this was precisely the long-forgotten or neglected doctrine of Plato. The nominalists held that types were merely a mental abstraction expressed by a word; this was the neglected doctrine of Aristotle. And so the whole affair was but a revival of the ancient Greek controversy which had been carried on fifteen hundred years previously;* only the names of the actors were changed, and Abelard, Roscelin, Anselm, Johannes, Scotus Erigena, Thomas Aquinas, and Duns Scotus usurp the places of the illustrious Greeks.

How far modern metaphysicians have really progressed beyond the ancient is a matter of doubt. It is a fair question to ask whether metaphysics has yet attained to the dignity of a science, and, indeed, whether it ever will. As no man can read the interior perceptions and sensations of another, he is compelled to reason from his own. The number of men qualified to investigate their own mental constitution is very limited, and still fewer are those who possess the gift of conveying the result of their investigation in an intelligible form to others. But just as Aristotle's inductive philosophy failed in practice because he had not sufficient data from which to deduce general laws, so it is with metaphysics. In order to eliminate the general laws of mind, it is necessary to have a large number of experiments and observations. How, then, are these to be furnished? The experience of one man requires a volume to detail it; the experience of a thousand

* Lewes' *Biographical History*, pp. 355–361.

would require a thousand volumes; and even then a thousand experiences out of many thousand millions can hardly be considered broad enough to base a well-established law upon. Yet what human brain could digest the detailed reports of a thousand metaphysicians and deduce permanent laws therefrom, even assuming that the writers had made no mistakes and been in no way misled?

But, until this is done, where is the *science* of metaphysics? One philosopher is refuted by another, and so it has been from the earliest times down to the present; and this is simply because they cannot appeal to facts in sufficient numbers to establish laws. The philosophy of mind never attained to the dignity of science in ancient times, and can, therefore, hardly be included among the lost sciences; but the contributions of the great thinkers of antiquity to the literature of the subject had their value, and that was lost to the world for long ages. The revival of learning in the fourteenth and fifteenth centuries restored much of what had been lost; but even with all the help which can be derived from Plato, Zeno, Aristotle, and others, as well as from Descartes, Spinoza, Locke, Boyle, Condillac, Berkley, Hobbes, Hartley, Reid, Thomas Brown Hamilton, Cousin, Kant, Fichte, Hegel, Schelling, and a number of other modern thinkers, the old Scotchman was not *very* far out when he said: "When ye hear a man speaking to others of what they don't understand, and what he does not understand himself, that's metaphysics."

ART. III.—1. *Reports of the Secretary of the Navy to the President of the United States, from* 1863 *to* 1870.

2. *Discussions in Congress on the Navy of the United States during the last ten years.*

IN our last number we showed that the statesmen and philosophers of all ages have deemed yachting * worthy of the

* Art. "*Yachting not merely Sport.*"

most earnest encouragement, and awarded the highest honors to those who distinguished themselves in seamanship by that means; we also showed that it was not merely for the manly, invigorating sport it afforded that it was thus highly esteemed, but chiefly because in every maritime nation it contributed much more powerfully than the ordinary observer could understand to the national safety and prosperity. For what debating societies have ever been to the bar, the senate, and even to the church, amateur sailing, or aquatic sports, have been to the war and commercial navies of every nation that had the advantage of possessing such.

But when we come to speak of the Navy no research is necessary to prove its utility; the most thoughtless reader can comprehend its importance without being reminded of the noble results accomplished by the fleets of Rome or Carthage, Athens or Tyre. Accordingly, we shall confine ourselves, in the present instance, to facts which are within the reach of all, only premising that it is now too generally forgotten that some of the most glorious as well as the most momentous of the world's battles have been fought by navies.

In proof of this, it were almost sufficient to mention Salamis. At this battle, the small but heroic and highly enlightened republic of Athens saved itself from the Persian yoke by means of its navy; which, though much smaller than the combined fleets of Xerxes and his allies, gained a complete and ever memorable victory. It is well to remember that the victorious fleet was chiefly manned by the yacht clubs of Athens, to the spirited rivalry of whose swift-sailing *Akatos* and *Keles*, on the Illisus and the Ægæan, we alluded in the article referred to above; it should also be remembered, especially by our young men, that the commander-in-chief of the Athenian fleet—the officer corresponding with the Admiral of the present day—was Themistocles, who was rendered so illustrious by the event that when the greatest conqueror of modern times was forced by the fortune of war to surrender to the

British, it was not to Hannibal, Alexander, or Scipio he was proud to compare himself, but to the naval hero of Salamis.

With these remarks as an introduction we proceed to the discussion of a subject to which no American citizen, whether native or naturalized, can be indifferent. Those most unfriendly to republics, even among our European readers, can hardly charge us with indulging in mere hyperbole when we say that it would seem, from the progress made by our country in the arts and sciences, commerce, agriculture, and manufactures, that we are destined to outstrip all the nations that have preceded us, since it must be admitted that we have already attained a position equal to that of some of the best, notwithstanding the shortness of our existence as an independent people.

The annual reports to our government exhibit resources almost illimitable, which, if properly fostered and developed, must in time place us in advance of any other nation recorded in history. It depends a great deal upon ourselves, however, whether we are to derive great benefits from the abundance with which Providence has favored us, or whether we are to hold a mediocre station in the world, and by our example give weight to the belief that republics are not lasting; that the advantages of their institutions are evanescent, and that, having no solid foundation upon which to rest, they soon fall to pieces.

To ensure success, every branch of a republican government should steadily keep pace with every other. The wants of each must increase as the country expands its boundaries and the population enlarges; like a human being passing from youth to manhood, all whose limbs and faculties are increased in an equal ratio, in accordance with the requirements of the human machine. As the population of a republic increases, its legislative bodies and judiciary are enlarged; its bureau of internal affairs grows more extensive, and its Army and Navy should keep pace with these. As regards the army, the great rebellion proved that there was no serious difficulty in

raising a sufficient force, at short notice, when required, and the world is satisfied that we can in an emergency expand our military force to any required extent.

In the present article we intend to discuss briefly the propriety and necessity of so increasing and establishing the Navy of the United States that it will keep pace with the advance of our country, ensure us respect from all nations, and afford our coasts complete protection from the sudden attacks of our enemies.

Few are aware that only eighteen months since our government came near being humiliated in the eyes of the whole world, from the fact that, on the advent of the present administration to power, it was unable to send a single vessel to sea, as its predecessors had let everything go to decay, and there was no professional ability at the head of the navy.

During eight years all departments of the naval service had become completely disorganized. Fine old ships, once the pride of the nation, lay rotting at the docks; all the sinews of war, in the shape of ship-building material, had been wasted on doubtful experiments, which showed the absence of all professional knowledge, and the most incapable men had crept into places of trust and profit, where they played the canker-worm to eat out the heart of the navy.

It must be admitted that when President Grant came into office this was the condition in which he found the navy. Whose fault it was, or what were the causes that led to it, we need not now inquire, since it is evident to the most superficial observer that a system which requires the navy to be supervised by a civilian, who cannot possibly comprehend the wants of so intricate a department, but naturally thinks more of benefits to accrue to himself than of those destined to serve the country, must be radically defective.

In all countries the tendency of war is to build up military and naval establishments; but we have proved an exception to the rule. Although we increased our naval

forces during the rebellion, yet at its close we were left in a weaker condition than when the war commenced; an anomaly in the case of a successful naval warfare like our own; for never, in the history of modern war, did a nation accomplish more important naval success.

We commenced the war with very few vessels of note, and the contest was nearly at an end before we succeeded in producing a vessel that could resist unharmed the fire of heavy batteries. Our fighting was performed with wooden vessels against heavy sand forts and fortified hills, in tortuous and treacherous rivers, with their uncertain currents, or on stormy coasts, where our enemies were protected by hidden bars and reefs; yet there is scarcely an instance on record where our navy failed to achieve success when it attacked a stronghold.

It has doubtless occurred to every reader of European news how little the French navy has hitherto effected against the Prussians. Notwithstanding its great iron-clads with invulnerable sides, its double-fortified guns of long range, and its rams with their crushing bows, scarcely a gun has been fired against a fortified town or a Prussian ship. The efforts of the French fleet have been confined to blockading the Elbe and Weser, and the port of New York; blockades which were raised after a short duration.

While it is very far from our intention to reflect on the want of activity of the French navy, we cannot avoid remarking that the conduct of our own navy during the rebellion presents a striking contrast. The fortifications attacked and captured by our ships were of the most imposing kind; superior, in every respect, to Copenhagen, captured by Nelson's great fleet of three-deckers; to Algiers, silenced by Exmouth; to St. Jean d'Acre, captured by the French; to Vera Cruz, by the French; superior to those guarding the passage of the Dardanelles forced by the English. All these stand in history as great naval achievements.

Against these we will place the attack on Port Royal by Dupont, with a few wooden vessels, the largest a frigate; that

on New Orleans by Farragut and Porter against a vastly superior force of guns; that on Mobile by Farragut against a superior force; that on Arkansas Post; the several attacks on Vicksburg; the battle of Grand Gulf and the two attacks on Fort Fisher by Porter; not to mention the constant skirmishing that took place between our vessels and the enemy's forts, which latter were never allowed any rest from the beginning to the end of the war.

Let the history of the rebellion be carefully studied and it will be seen what an important part the navy took in the contest, and how doubtful would have been its suppression without the aid of naval power. If ever the necessity of a navy was shown it was during the progress of our late war; and it is therefore most remarkable, with the facts in view, that the nation has made no effort to put its marine on a footing commensurate with its own greatness.

At the close of the war the navy died out as completely as if it had never existed, and it was not until President Grant was pressed to recognize the Cuban insurgents, by according to them belligerent rights, that he found that he had no force to maintain the principles at stake. "Not one ship could be got ready for sea under five months," was the answer from the Navy Department to an inquiry a short time after the President's inauguration.

There was some excuse for our being despoiled of a navy at Norfolk at the opening of the war, although when the history of that affair is published to the world it will appear that the authority which permitted the burning of the dockyards and ships was an accessory to the destruction of the navy at the end of the war; but there would seem to be no reason why a navy that had made itself so famous in war, and deserved so well of the country, should have been allowed to go to such absolute decay up to the time of General Grant's accession to the presidency. Had the president accorded belligerent rights to the Cubans, our merchant vessels would have been searched on every sea; the Spaniards would have flaunted their flag in our

faces in every port, and we should have attained a position most humiliating to our pride.

To-day, fortunately, a better state of things exists. The President very properly selected an officer of the navy who had commanded our largest fleets, and was closely identified with the interests of the service, and gave him as a professional adviser to the Secretary of the Navy, whose duty, by this arrangement, was rendered much more easy.

The navy yards were at once filled with skilled mechanics, order was brought out of chaos, and good regulations were introduced in all the departments of the navy. Our old ships were renovated and made equal to new, with the addition of tho modern improvements, and in less than a twelvemonth the navy arose, as it were, from its ashes, and now stands foremost among those of the world in organization and discipline, although inefficient in point of numbers. Yet, with all that has been done for it, how inadequate is it for the protection of our commerce abroad or our harbors at home! Congress in its wisdom adjourned, leaving the navy department destitute of means to increase our fighting force; for, although we have fine ships carrying our flag abroad, they are, by no means, representative war vessels fitted to cope with the iron-clads of foreign navies.

In the event of a war breaking out between the United States and a naval power, through what an ordeal would our officers have to pass, and what useless sacrifices would they be called upon to make!—for our people, generally ignorant of the composition of a fleet, and not knowing the vast difference between an iron-clad and a wooden frigate, would expect the same successes against the cuirassed ships of Europe that were obtained over the rebel vessels in the late war.

Who does not remember how Dupont and Dahlgren, two as gallant officers as ever trod a ship's deck, were criticised for their unavailing efforts to break the barriers of Charleston against a force ten times the strength of their own, and how ungenerous a portion of the press has been in attempting to

snatch from officers, who perilled their lives in the service of the country, their well-earned reputations.

It can easily be imagined how restless would the people be were our ships in time of war to do as little as has been done in the Franco-Prussian contest by the huge French navy. Yet we fear that there would be no way of preventing such inaction in the present state of our navy, which is wholly due to the service not receiving the necessary supplies. Now, it may be asked, what is the remedy for all this? The answer is plain. Let us, in this respect, take pattern by Napoleon III. and the British Lords of the Admiralty. Let us commence, *de novo*, build a new navy, and dispose of the old to the highest bidder. This is the only true course to pursue. We should not keep on hand what may prove to be our downfall in time of war, and will never be successful against the navies of enlightened states.

Napoleon III. went to war because his generals led him to believe that his army was the most efficient in the world. If we go to war it will be with the knowledge that we are totally unprepared for a naval encounter; and although our seamen will fight against desperate odds, they cannot hope for success with the means at hand. By an examination of the Navy Register it will be found that our ships bear high-sounding names, but these are applied with little discrimination to iron-clads, wooden frigates, and tugs, the last-mentioned predominating.

In a report lately made to the Navy Department by a board of officers, of whom Rear-Admiral Goldsborough was the president, it is stated that few, if any, of the vessels in the service fulfil the requirements of a modern navy, or compare in efficiency with those of European fleets. Six nations have navies far superior in size to ours, viz.: England, France, Spain, Italy, Turkey, and Russia; while Prussia is rapidly overtaking us, and several minor nations have navies quite equal to ours.

All these nations are progressive, while we are at a stand-

still, having done nothing since the close of the rebellion beyond repairing the few vessels that were left slumbering in the dockyards, fair representatives of the Rip Van Winkle who, for so many years, presided at the head of our naval establishment. The navy yards are even in a worse condition than the ships, for beyond a small increase in the workshops they have made no advance in the last twenty-five years, and the channels and approaches to them are gradually filling up.

A fine opportunity occurred during the rebellion to place our navy yards on a footing with those of France and England, but the spirit of lethargy pervaded the bureau of Yards and Docks, as well as other portions of the department; the chance was lost and money enough to have built a score of dry-docks was turned into the treasury, or wasted in absurd "experiments" in steam machinery, which have been the derision of the best engineers at home and abroad.

Terrible mistakes have been made, from the fact that the organization of the navy department is defective. There seems always to have existed a jealousy against placing experienced naval officers in positions where their talents could be made available in planning or constructing the proper kinds of ships for the navy. We have pursued a system the direct opposite to that of all other nations; instead of employing official experts, we have placed the direction of naval matters in the hands of civilians.

In forming a department of Justice it would be thought very improper to place at its head a mere politician instead of a lawyer of known ability. This idea evidently influenced President Grant in carrying out the provisions of Mr. Jencke's bill, as he has exercised unusual care in the selection of men to fill the offices in the bureau of justice attached to the department of the attorney-general. A similar policy pursued towards the navy would be a preventive against future failures in that department; the best ability in the service should be made use of to save it from absolute ruin.

It is true that within the past eighteen months a great deal

has been done to place the navy in a respectable position, but this was due to the adoption of a temporary arrangement, which granted extraordinary powers—exercised with promptness and decision—to an officer of experience. The appointment of the officer alluded to was not, however, confirmed by any law, and it did not, consequently, carry with it the force that it would otherwise have done. Hence the necessity of appropriate legislation on a subject of vital importance to the navy.

One thing has been shown by the short administration of the last eighteen months, that the service has received an impetus that it had not felt before in time of peace for many years, and it is to be feared that a reaction will take place when the motive power ceases to act. We have gradually succeeded in getting our navy, small though it be, on a respectable peace footing; but it should be feared as well as respected; otherwise of what use is it among the savages of the South Pacific or the semi-civilized people of China and Japan? How little do the irascible Spaniards care for such naval vessels as we send among them?

The Government should commence afresh, and, considering all our yards and shops as complete failures, plan them anew and sell the old material to the highest bidder. Suppose that we should suddenly become involved in a war with a naval power, what folly it would be to imagine that it could be conducted on our side with success if naval men did not direct the operations of our fleets! Naval officers would then have to be called upon to advise and direct, as was the case during the rebellion. Why not call them in time of peace and let them prepare for the conflict from which we cannot, any more than other nations, expect immunity? Could we hope for success in a war with Great Britain, against the talent and experience of her Board of Admiralty, in the present state of organization of our Navy Department, divided into bureaus with imperfect concert of action, and not

presided over by a united board of professional men with the knowledge necessary to an intelligent direction of affairs?

It is a fact but too obvious, that there has never been complete harmony of action on the part of naval bureaus, but the contrary. This must ever be the case; for in building a ship each head of a bureau is anxious that his own ideas should predominate, and will carry out those ideas, if he is so disposed, by a mode of action which has heretofore been resorted to. Hence the necessity of organizing the navy department on a purely naval plan, in which all professional matters shall be settled by a professional head or board of officers, from whose decision there shall be no appeal.

There have been many suggestions made in regard to this matter, and many bills introduced into Congress, but the bills have all been defeated, either by those who had "axes to grind" or by the civilian head of the department, who naturally anticipated some reduction of his "patronage" in navy yards. And here let us ask, of what use can the trifling patronage of the government dockyards be to an administration? A few members of Congress are benefited, and the public funds are squandered to help out a few local elections. The result is that we are left year after year with a diminished navy.

Any one who reads the English naval estimates can readily see how much the Board of Admiralty could do with the twenty millions of dollars that are yearly expended under our present system. The expenditure in England, with six times our naval force, is not over forty-six millions of dollars, and with its honest and economical disbursements iron ship after ship is annually turned out and put in commission, forming a fleet with which England can to-day sweep the seas.

When the American "Monitor" stopped the way of the iron-clad "Merrimack," the English admiralty at once saw that the day of wooden ships was over, and without a moment's hesitation they set to work to supply their want of an

iron navy. That was less than ten years ago, and now England stands the first naval power in the world, while we stand only seventh; she advancing all the time, we remaining stationary!

Since the memorable fight in Hampton Roads we have spent about five hundred and twenty millions of dollars, and we have but a poor exhibit for our money, while England has only spent about four hundred and fifty millions of dollars, and has the strongest navy in existence. So much for a board of admiralty as opposed to our bureau system without a supervising board.

It was asserted by a British naval captain, who was sent to this country by his government in 1826, that our Board of Navy Commissioners, which was abolished in 1842, was the best system for organizing, building, equipping, and conducting a navy. Had we possessed such an organization at the beginning of the rebellion we should now have had the largest and best navy in the world; for the same amount of wood and iron that now encumbers the numerous vessels at our dockyards, properly disposed in the right kind of models, would have made formidable ships of war.

This is a subject that requires the mature consideration of any man who may be called upon to fill the post of Secretary of the Navy. We have had few men of naval experience in that position, and none brave enough to throw off the shackles of politics and exert their influence to reorganize the navy on a basis that will promote the harmony of all its parts.

In the present article we have abstained from entering into particulars; but we shall return to the subject from time to time, until Congress realizes its duty to the nation in regard to the navy. Suffice it to add now, that if our legislators were one-tenth as willing to make appropriations for building ships and dock-yards for the navy of the United States, for the defence of the nation and the protection of its commerce, as they are for building railroads for the benefit of speculators, instead of being as we are, only a seventh-rate naval power, we should soon become the first in world.

ART. IV.—*The Works of* THOMAS DE QUINCEY. Boston: Ticknor & Fields.

IT has often seemed strange to us that the works of De Quincey are comparatively so little known, both with regard to their actual merit and the extent of the field over which they range. That a writer, who has touched almost every department of prose literature and science, from political economy and theology to fiction, should be thought of by the mass of the world as the author of one book—the "Confessions"; and perhaps as a curious example, setting forth how near a man can approach the brink of perdition without being forever engulphed in its abyss, seems at first sight marvellous; yet, on examining the fact more closely, perhaps, it is not so utterly astounding.

The immense majority of people, not merely of those who content themselves with being acquainted with the outside of books and the names of their authors, but of those who profess to have a desire to "know a little" of every writer, in order that they may parade the titles of works read, would not be apt to seek in the essays of De Quincey, a name as yet unsanctified by age, and standing solely on the basis of its own merits—the rich stores of knowledge and pleasure therein contained; while, on the other hand, the "public" is most apt to seize upon and become thoroughly acquainted with the faults and defects of every man who towers above his contemporaries, at the same time that it slights or totally neglects his labors. Thousands, probably, know of Lord Bacon's corruption, who would find it impossible to name one of his works; of Chatterton's forgery and suicide, who never looked inside his book; of Marlowe's death in a tavern brawl, who never heard of the Jew of Malta, and who knew, it may be, Dr. Faustus by name only; to many John Milton is a blind man, crabbed and cross, moody and puritanical, very grand, no doubt, and wrote Paradise Lost, over which book these sympathetic critics yawn; and as for the lighter beauties of Comus and L'Allegro — why — if they ever read them, they probably examined as deeply into them as Mr. Gifted

Hopkins did into Spencer. But there is no necessity that we should pursue this train of thought any further; since all who reflect are aware that it is the greatest and most cultivated intellects, including Aristotle, Plato, and even Homer, who, in all ages, have been read by the fewest numbers; there is nothing so very astounding in the fact that so great a writer as De Quincey has been thus neglected.

When we look through the works of De Quincey we find that he has labored in the following departments of literature: historical and literary criticism, biography, autobiography, theology, history, political economy, philosophy, and fiction;* and when we consider that he has written well in all, achieved greatness in several, may we not indeed marvel?

In reading De Quincey, our attention is at once arrested by the excellence of two apparently opposite qualities—his command of the terrific and terrible and his skill in the use of lighter humor; as a good illustration of this, take the first of his papers on "Murder considered as a fine art," and observe how playfully, how prettily he trifles with so serious, so fearful a subject; observe his manner of *blaming* murder, his affirmation "that murder is an improper line of conduct, highly improper," and that he does not hesitate "to assert that any man who deals in murder must have very incorrect ways of thinking, and truly inaccurate principles." Assuredly this calls to mind the Roman noble, pictured by Ammianus Marcellinus, who, when one of his slaves is brought before him charged with murder, remarks, that "the slave is a worthless fellow, *and if he repeats the offence shall not escape punishment.*" Then turn from this elegant trifling to the last paper of the same series, and remark how the "three memorable murders" are treated, and we think that this, our starting observation, will be fully justified.

As the use of the first-mentioned power is very noticeable

* In his youth he also indulged to a slight degree in poetry, and tells us that he would not have been an atrociously bad poet, though not a great one.

in his works of fiction, we will consider them before passing to his other works. Let us take, then, "Klosterheim" and the "Avenger," in which he has woven together the terrible and the mysterious; with what wonderful skill does he lead on from event to event, still keeping his goal, cloud-enveloped, hidden from ordinary sight in the first-mentioned tale, maintaining the mystery to the very close of the book, and in the second failing therein only—though perhaps we judge in this case too much from our own feeling in reading it—by making his hero not a little too attractive. Of the two novels, the "Avenger" is, perhaps, the more powerful; but, to our mind, "Klosterheim" is the more artistic and the greater work. Its opening, so grand and yet so simple—a crowd collected in the streets of a not very large town; but the Thirty years' War in the background, the scenes it presents throughout the midnight bivouac, the meeting of the lovers, the prowling assassin, the spectre "who rules Klosterheim by night," the dissappearances, one after another, of citizens, the marks of violence, the ball, with music and revelry in the grand saloon, while near by is the chapel and the masked executioner, into whose awful apartment penetrate shouts of joy, then the spectre moving amidst the revellers, the discovery—all, all show the hand of a master of dramatic art.

It may be noticed in De Quincey's works of fiction, in addition to the use of the terrible and mysterious, that there is a general prevailing idea of fate, as an unseen power, leading or driving its victim onward. The extensive introduction of this idea is probably due to his intimate acquaintance with the Greek tragedy, the characteristic of which is the passive obedience of all the *dramatis personæ* to fate, which impels them to do, or forces them to suffer; and this peculiarity, so essentially tragic, well accords with the before-mentioned traits of De Quincey as a writer. There is something terrible in the very idea of a man being pushed on and on, whether consciously or unconsciously, in either case resistance alike unavailing, towards an abyss which he cannot avoid. In the

one case it is the sailor compelled by pirate captors to precipitate himself from the ship's bulwarks into the sea beneath, roaring and tossing and seething and lashing the vessel's sides, while below its troubled surface sharks and other monsters await their prey, the prisoner may struggle or he may implore, but in vain; the fierce crowd behind him press him onward, and he falls! In the other case it is the blind man, calmly and collectively walking toward the brink of a precipice, with no one near to warn him; at last he reaches the edge, and all is over. This idea of fate, as we have remarked, seems to brood over De Quincey, and was probably contracted from the study of Greek tragedy, of the spirit of which no English writer, except Sergeant Talfourd in his "Ion," betrays so large an infusion; we have taken notice of it here, not because it is manifest only in the works of fiction, for it enters into many other of De Quincey's writings, but because it is here most observable and most legitimately so.

But it is in the department, or rather the various departments of criticism that De Quincey stands out before us most prominently. As a critic he is singularly just, being one of the extinct race of whom Dean Swift speaks,—the critics who pick their way very carefully, seeing all the mud and filth before them, which they carefully point out and with equal care avoid; they do not, swine-like, stop to revel therein, while a beautiful prospect enchants their eye and unloosens their tongue. There is no meanness in De Quincey's criticism, no desire to drag down a great name, and yet no servility, no bowing down before a popular idol. A good example of this is seen in his treatment of Wordsworth. When poems by Wordsworth came first under public notice, and everybody was deriding the would-be creator of a new school, the writer, whose estimation then by the world at large may be well exhibited by a phrase used by Lord Lytton several years later, "out-bal. ing *Words*worth;" when all were decrying this "milk-and-water poet," then De Quincey, a young man, had the courage to front the storm of popular opinion, and boldly

to proclaim the beauties and excellences which his superior taste had recognized in the despised lake-poet. Years after, when the abilities of Wordsworth were generally acknowledged from one end of England to the other, when those who had been loudest in condemnation had either become silent or swelled the crowd of adorers, De Quincey still had courage and fairness: this time to point out the numerous and manifest defects of the "Excursion," at the same time that he lauded its more numerous beauties.*

In the department of historical criticism, De Quincey has distinguished himself by his remarkable acumen. A great scholar, he was not to be deceived by false readings, a man of quick sight and strong sense, he was not to be imposed upon by any improbable theory, no matter how specious in appearance, how sanctified by age, how confidently advanced. Note, for instance, the papers on the "Essenes," how he clears up the long disputed subject. It is as if the chemicals, truth and falsehood, had in a liquid form been mingled in a vase giving a dusky hue to the whole mixture. A third element, De Quincey, is introduced, and immediately is Error, as a black precipitate, thrown down, leaving, sparkling and shining, the clear, liquid Truth to delight and to refresh.

We are aware that these essays on the Essenes are classified under the theological head of De Quincey's works, but, to our mind, they are historical, or at least historico-theological; but regard them as theological if you will, we shall find a better representative of historical criticism in "Joan of Arc." This essay is, in our estimation, one of the very finest pieces of writing in the English language. There runs through the whole of it an elevated tone; an elevation moral as well as intellectual; elevation not for the writer only, but also for the reader, for De Quincey raises you to an immense height of feeling, *raises* you,

* The *Excursion* was published in 1814. In the same year Sir F. Jeffrey made a most bitter attack upon Wordsworth. Wordsworth became Poet-Laureate in 1843; it was not until after that time (1844 or '5) that De Quincey's strictures on the *Excursion* appeared. If any one will read both critiques he will be struck by the difference. One is a mere attack, the other a dispassionate judgment.

we say, for you are conscious of no effort in following him; you are carried aloft in spite of yourself.

This is the truly grand, the practically grand, for when you sit down to read an author professedly of the grand school, but who clothes his thought in that obscurity of language which some writers appear to think a necessary concomitant of grandeur, writers in whom the imagination does, indeed, "body forth the forms of things unknown," but who forget the rest of the task of a true poet to "turn them to shapes and give to airy nothing a local habitation and a name," so much effort is expended in the endeavor to comprehend, that the vital force to enjoy is often diminished in a proportionate degree.*

There is nothing of this in De Quincey; he is never unnecessarily abstruse, and never abuses his great weapon, mystery. We were lately reading the article "Jeanne D'Arc," by the distinguished French critic, St. Beuve—whose writings abound in beauty and instruction, whose books, having once taken up, you are loth to lay down, and to whose articles you object that they are too brief, much more frequently than that they are too long—and we were struck with the difference between the two men, who seem to us to hold somewhat analogous positions in their respective countries. In St. Beuve there is more cool dissection, and, even when he is evidently fond of his subject, his passion never carries him away; he maintains always a calm, judicial speech, as if he were a judge charging a jury, with a slight bias towards the prisoner.

In De Quincey there is an equal insight into cause and effect, but he does not always confine his powers, but soars above into

* We wish here expressly to disclaim any implied condemnation of writers who, from the nature of their subjects, or the effect designed to be produced, have written in a style a little hard to be comprehended; also any insinuation that a great writer must make his images as distinct as the little moving beings in a camera-obscura, for this would destroy grandeur, part of whose composition is mystery and awe. We wish merely to object to those writers who endeavor to give their ideas, not grand in themselves, a factitious and fictitious grandeur, by means of involved sentences, points of exclamation, blanks, dashes, capital letters, etc., wherein an ingenious and imaginative reader discovers more than was in the author's brain; also, to deprecate any unnecessary obscurity of diction.

realms which St. Beuve leaves unattempted. De Quincey is, rather, to carry out our simile, as the upright advocate who, having dilligently examined into the justice of the cause before accepting it, addresses the jury, carefully recapitulates the facts in evidence, fairly and honorably, nay, even admits what truth may rest with the opposing party, and then, firm in the consciousness of right, bursts into a torrent of eloquence on behalf of the side he has adopted. If this should seem to any persons not to be true criticism, and if they would confine that title to the extraction of the isolated beauties and defects of a cause, without putting them together again; in a word, to analyze without synthesis, we beseech them to take the etymology of the word and recollect that the κριτης judged of the whole cause as a unit and not merely of its details, and it is very likely, especially among the excitable Athenians, that a κριτης may have shown considerable feeling in giving judgment. Indeed, we need not go back to ancient history to find a judge expressing his own opinion; such a case occurred not long ago. A bequest was made to a society not yet in being, to be known as the "Infidel Society," whose object should be to disseminate infidel principles. The will was disputed, and the judgment thereon was pronounced by a jurist of whom the whole land has reason to be proud. He, after declaring the legacy void because of the non-existence of the legatee, went on to say that, had the legatee been *in esse*, he, the judge, would still have declared the devise void as being immoral. Now, to establish his judgment, it was sufficient that he should have alleged the first ground; but will any one say that the judge violated his duty in making the subsequent declaration?

So, in the same manner, a critic, after giving judgment on critical principles and canons of taste, has, we think, a right to carry his auditor with him, to make him enjoy what he has enjoyed. But, as a critic, De Quincey did not resort to appeals to feeling and passion *to blind* his readers; he used his power sparingly, and if you wish an example of quiet,

historical criticism, with scarcely a wave of passion, turn to his essay on Cicero. Here he carries analysis to the very thoughts of the man, and, mark you, he was never deficient in analysis; he could dissect as skillfully as the most determined "cutter up," but he put together again and rarely left dismembered fragments.

In passing, we must call attention to the essay on the "Antigone" of Sophocles; and one reason for so doing is that it gives the best idea of the Greek tragedy that we have met with in English literature; and we advise any one, who wishes to obtain a proper conception of that most interesting branch of ancient literature, to read this essay carefully. We must also call attention to the "Sphynx Riddle" as an essay of exceeding beauty and ingenuity, and then proceed.

We come now to the essays on the philosophical writers. Here De Quincey displays great intimacy with their writings, and yet does not make of his essays mere dry reviews, but works the personality of his subject into his deeds and compositions. In one of these essays a little political feeling is betrayed; the one we allude to is that on Dr. Parr, who is handled in a very severe manner. Now, while we believe that Parr was a greatly over-estimated man, and that the comparison of Dr. Johnson (crabbed and narrow, but brave and honest) to Parr is "Hyperion to a satyr," yet we think that, had Dr. Parr been of the other side of politics, he would have been treated much more tenderly, or perhaps not written upon at all. This idea is much strengthened when we observe how, in another part of his works, De Quincey has dealt with another illustrious whig, Sheridan, whom he characterizes in one word as a "charlatan." This, it does not require a great amount of mental insight to see, is shockingly, horribly unjust; and one cannot but wonder to what place De Quincey's usual fairness had been banished when he wrote the three pages which, under Rhetoric, he devotes to England's most brilliant orator. A

charlatan, he who wrote the "School for Scandal" and the "Rivals?" A charlatan, he who, side by side with Burke and Fox, upheld British liberty in parliament against ministerial aggression, while Erskine battled before juries in the same good cause? A charlatan, he who made those two grand speeches in the Hastings case, during which the governor-general confessed that he felt himself a guilty thing? A charlatan, indeed, who was dangerous, since, after a speech of his, Pitt refused to allow a vote to be taken until next day. No; this can hardly pass without censure from any one who has enjoyed Sheridan's plays, or who has read, without being previously blinded by passion, his speeches.

But this is a digression. The other philosophical writers upon whom De Quincey has written are: Hamilton, Kant, Mackintosh, Herder, Richter, Lessing, and Bentley. The essay on Bentley is a noble work, and the account of the Phalaris controversy shows how a genuine scholar, who loves learning and wishes to make others love it also, can render what at first sight seems a dry and unpromising subject replete with interest, not only to the learned, but to all who admire ingenuity and talent displayed in the detection of error or in the management of a dispute.

Before leaving criticism, we must notice the "Essays on the Poets and other Writers," which is, properly speaking, a series of compromises between criticism and biography—at times, as in the essay on Pope, leaning toward criticism; at other times, as when Hazlitt is the subject, toward biography. To our mind, the finest of these essays is that on Shelley—poor Shelley, whom we all wonder at, and yet pity, love, and still recoil from. On this part of our subject we might spend a long time, were time ours to spend; we might look at De Quincey's opinion of Pope, and remark how far it agrees with those of Lord Carlisle, the Rev. F. W. Robertson, and others who have dissented from the universal veneration in which Pope, not very many years ago, was held, and to which Lord Lytton was still a slave at the time of the publication of his,

to our mind, best poem by far—the "New Timon," in which he asked:

> "Am I enthralled but by the sterile rule,
> The formal pupil of a frigid school;
> If to old laws my Spartan tastes adhere,
> If the old vigorous music charms my ear,
> Where sense with sound and ease with weight combine
> In the pure silver of Pope's ringing line?"

With all due respect to his lordship, we would answer "Yes," and, diffident with regard to our own merits, appeal to the distinguished critics before mentioned, as it is foreign to this article to discuss the question; especially as attacking Pope *now* is very much like "hitting a man when he is down." But still, honor is due to those who fearlessly pointed out his defects while he was at the height of his popularity, and who thus rescued our literature from the domination of a "correct school," which reminds us, in spite of its greater refinement and the ability of its disciples, of the correct school of Hans Sachs.

We feel impelled here to enter our protest against the low opinion which De Quincey avows concerning Göthe. We are not worshippers of Göthe, like Carlyle; but we cannot agree with De Quincey that he must sink for two or three generations before he reaches his proper level. It seems hard to say this of the man who, if he had done nothing else, has written Faust and created Mephistopheles; for, although Marlowe has used the story of Faustus before Göthe, and has made from it a grand poem, it contains no such subtle fiend, no such incarnation of selfish, cultivated intellect, hard and cold, as is shown in Mephistopheles. It is unjust, also, to speak thus of the man who has given us such noble views of life, and who has taught us, with so great emphasis, that man has here a duty to be considered higher, far higher, than his mere happiness,—

> "Sed fugit interea, fugit irrevocabile tempus,
> Singula dum capti circumvectamur amore."

De Quincey has left behind him, in the "Opium-Eater," "Memorials," Literary Reminiscences," and "Autobiographical Sketches" an account of his life and times. On the first-mentioned work we shall not touch, since, as that is the work by which De Quincey is known to most people, an account of it would be superfluous in an article whose object is to call attention to generally-neglected beauties. The "Memorials" relate principally to the author's boyhood, and here, as well as in the "Autobiographical Sketches," he takes the reader into his confidence. In the "Reminiscences" he introduces to us all the prominent members of the Lake school, with whom he had every opportunity of becoming acquainted; possessing a mind scarcely inferior to the greatest of them—of a genial, good-hearted nature—his society would naturally be sought by kindred spirits, and his own would go out in friendly greeting wherever he discovered the spark of genius. Then, too, in a country so thinly settled as the Lake region, each individual is more dependent upon a single neighbor for society and pleasure than in a city, where he can rove from one acquaintance to another; consequently, in the country he is obliged to become acquainted with the peculiarities and idiosyncrasies of each associate, in a degree of minuteness almost impossible in a city. Further, in such a country as the Lake region, with its wild grandeur, its faces, ghylls, tarns, the mind of man is naturally lifted up from a contemplation of the glorious works of God to their Divine Creator; it is filled with noble thoughts and inspirations which impress themselves upon the speech; and, consequently, there man is known at his best.

De Quincy's recollection embrace Davy, Godwin, Mrs. Grant, Lamb, Coleridge, Wordsworth, Southey, Walking, Stewart, Edward Irving, Talfourd, Clare and Cunningham. Concerning the lakers, he is, as is natural, much more full than with regard to the others. His account of Wordsworth may perhaps surprise those who have formed their idea of this

poet from his writings, from the calm catholicity of the "Excursion," or from such lines as the following:

> "Where'er we roam—along the brink
> Of Rhine, or by the sweeping Po,
> Through Alpine vale, or Champaign wide,
> Whate'er we look on—at our side
> Be Charity to bid us think
> And feel if we would know."

for we are told that Wordsworth often manifested contempt for those who were, or whom he fancied were, inferior to him mentally, and that even our author did not escape. But how exquisitely in these pages stands out Charles Lamb,—how every beauty of that unfortunate man is brought before our eyes; his touching story, noble self-sacrifice, geniality, hospitality, wit; so that, after reading De Quincey's sketch of Lamb, although we are still inclined to dissent from the general estimation in which he is held as a writer, we cannot refuse our admiration to a man whose very weaknesses seem to make him more loveable.

We have said above that De Quincey is distinguished by a command of light humor, and in order to substantiate this assertion referred, cursorily, to "Murder considered as a Fine Art." The structure of this work deserves a little closer examination, and well it repays it! Let us then look at its points. In the first place the letter from the indignant and terrified supporter of public morals, his description of the horrible society organized for the promotion of murder; the professor's defence of the society at the opening of his lecture, his ingenious arguments for the propriety of its existence, present a combination of wit and humor rarely equalled. Then his account of the history of the *art* of murder, from the time of its inventor, Cain, for whose style, distinguished for boldness rather than delicacy, the professor sees fit to apologize, but of whose merits, as inventor, he insists upon the fullest recognition, to the day of Mr. Williams; his cool assertion that all great men have been mur-

dered, the proofs thereof fill up this paper, and make it, in itself complete—one of the best specimens of humorous and witty trifling in the language. Indeed, we know not a single like piece which exhibits so much fun and merriment, without anything low or vulgar, which handles so triflingly a grave subject without offending good taste. The nearest approach to it that we can at present recollect is the witty humor* of Washington Irving, but even that, in our estimation, falls short.

But De Quincey does not stop with this first paper; he has reaped only half his harvest; so he gives a second part, in which he describes the dinner given by the society in honor of Williams; and such a description! such an exuberance of racy humor, uproarious fun! In a few minutes the whole scene is painted; we see the wine-descending spirits proportionately ascending; the company becoming more and more talkative, more and more noisy; the delight at the achievements of the gentleman in whose honor the dinner is given less and less masked, and hear ever and anon the chorus resounding,

> "Interrogatus est, a toad in-the-hole,
> 'Ubi est ille reporter?'
> Respondunt omnes cum cachinno
> 'Non est inventus.'"

with about as much attention, time, and tune as is paid to *Gaudeamus* when sung by a party of university men at midnight, after liberal potations.

We shall not enlarge upon the third paper of this series: it is not humorous, it is terrible; it is of fearful, wonderful power—too powerful, in fact, to be enjoyed save by a person of strong nerve. We now pass on, and come to a work which seems to stand alone; and we unhesitatingly pronounce it without an equal in its kind in English literature—namely,

* We use the words "witty humor" advisedly, as distinguished from genial humor, the humor into which an ingredient of pathos enters—and here Irving has few, if any, rivals at the present day; if we wish his superior we must go back to Sterne or Goldsmith.

the "Glory of Motion," under which title we include not merely the paper bearing that name, but also the two succeeding papers, "A Vision of Sudden Death" and the "Dream Fugue."

How prettily, how quietly does this series open! From a glorification of the ancient stage-coach—an argument upon the relative degrees of respectability possessed by the inside and outside, a description of the manner of travelling—we are gradually drawn on further and further, until we feel ourselves journeying with our author, see him jump from the top, and watch his sly flirtation with the buxom lass of the roadside inn, the coachman's granddaughter, while the horses are being changed—then tara-tan-tara-tan-ta! the guard's horn; every one to his place, and away dash the horses with speed increasing every moment, and hardly anything is heard but the decided fall of their feet upon the well-kept road. We are only reading, it is true, but we soon find ourselves in such complete sympathy with our author, that we almost seem to be moving and recognize fully that there is a glory in motion.

We never had the truth of De Quincey's description brought so vividly to our minds as one summer, in the White Mountains. In these days, when railroads have driven away coaches, we do not enjoy motion, because we are hardly conscious of it; we sit in a room, and are carried along with almost as little feeling—that is to say, on a good road—as Sir Huon of Bourdeaux experienced during his transportation to Tunis. Owing to the general prevalence of railroads, we had had but little experience in stage riding, except a few dreary drags to watering-places from railroad-stations, where two or at most four poor horses pulled along an overloaded coach; but the hand of art, especially inimical to romance, had not invaded the roads of the White Mountains, and when we left the cars at Littleton the stages were awaiting us—large houses on wheels, each drawn by six large, splendidly-built horses. We were fortunate enough to secure a top seat. The sun was beginning to sink, and a glorious

sight it was, there, with the mountains into which we were going standing out before us, rearing themselves proudly, inviting yet filling with awe. Soon we started, the sun sinking lower and lower, the colors on the hills changing, moment by moment, from deep to deeper. We drove on at a steady trot, a pleasant motion; but on arriving at a declivity, confronted by a corresponding descent, the driver gave the reins to his horses, and away went those six noble animals—down one hill, up the other, like the wind. Then we had called to our mind De Quincey's "Glory of Motion,"—there, amidst the grand scene, where grand thoughts only should enter, and the harmony of the scene was not marred. Let us notice, too, in this first paper, the "going down with the victory," and we see added to the exhilarating effects of motion those of patriotic joy, and observe at the same time the touch of nature, the exquisite pathos shown in the introduction of the poor woman whose son was in the —th Regiment.

If the first paper raises us to the pitch of joyous excitement, the second exhibits the excitement of fear and alarm, and of the most thrilling kind. We find ourselves upon the coach-top—for our author has taken us there, and will not let us depart—see the horses plunging into the night, the coachman sleeping, and then suddenly bursts upon our sight the fragile carriage with the two lovers, unconscious of the approaching danger. Nearer and nearer draws on the giant, closer and closer to the unfortunate pair comes destruction; our endeavors to awaken the coachman are unavailing—then comes the warning shout, almost too late—the energetic action of the young man—the fear, the agony of the young lady—then the awful moment in which we hold our breath—and finally the mingled exhaustion and relief as the coach passes on and the threatened lives are safe!

As an appropriate conclusion to the foregoing papers comes the "Dream Fugue;" and if one should search through the whole English vocabulary, and use Dr. Johnson's privilege of invention or naturalization in addition, he could hardly find

a title more expressive of the work. It is in very truth a fugue-vision, chasing vision: wild, yet solemn; terrifying, yet with lulls in the terror which reconcile us to it—lulls during which we gaze upon a calm and placid heaven; and then as our eyes are becoming accustomed to the sight, the sky is darkened, the thunder peals, angry clouds sweep over head; or rather it is as if we were looking on the bright surface of a mirror like Cagliostro's, pleased with the scene before us, when the surface is clouded, and when the film clears away another picture stands before us—a picture of horror and desolation.

This is all we shall say, for the present, about De Quincey's writings. We have only been able to pick a flower here and there, and yet our article has extended itself to quite a pretentious size. In conclusion, we will merely look at the man himself, as known from his works and especially in connection with his struggles with opium.

Many very good, but unthinking, persons are apt utterly to condemn a man who has fallen into the practice of any vice, without making the proper allowance for the general weakness of man, or inquiring into the peculiar circumstances of difficulty and temptation by which the particular individual man was beset. Condemnation with some is only made more strenuous when the man condemned happens to be one of genius, a shining light, an *avant-courier* in the march of human progress; "for," argue these worthy people, "a man gifted with extraordinary talents ought to be very careful of the manner in which he wastes them, he should consider the effect of his example; therefore we are justified in judging a great intellect severely." That is your side of the case; very well, we will now bring forward ours. In the first place, consider that when a man has done a certain amount of good in his day and generation, it is no more than decent that a certain leniency in judging of his faults should be exercised by the high and mighty sovereign—the world. "Oh, but he might have done so much more had it not been for this per-

nicious vice." Yes, so he might; but at present consider what he has done actually, and remember that while we are all, as considered in our service to God, unprofitable servants, yet some have done enough for the world to command its eternal gratitude; and that this very man may grieve as deeply over his non-attainment of the high standard proposed to himself as you can grieve for him, and condemn himself with much more bitter humiliation than his most determined enemy or most censorious judge can inflict upon him. Therefore, out of gratitude, make his woes as light as possible; honor him as far as you can.

Now, on the above ground, that of good done, we claim indulgence for De Quincey; for the whole tone of his writings is pure, high, noble, and Christian. But we rest not his case here; we have another defence, and that is, circumstances. Driven to London, a man in learning while yet a boy in years and diffidence, he fell into great misery, was dependent for his very food, from day to day, upon the kindness of a not very reputable character, who was hiding from his creditors; and the little food he received, the leavings of this man's breakfast, was shared with a poor child who inhabited the same house, as wretched, were it not for mental torments, as himself. De Quincey, the greater part of the time, was suffering from hunger, frequently almost starving; he felt the pangs of famine gnawing at his very vitals. Suffering agony, which lasted after its immediate cause was removed, who can blame him for resorting to that which relieved, at least temporarily, his pangs, and drowning his unhappy reality in a blissful dream? And if, O most stern judge, this does not to a very great extent palliate the accused's guilt, consider, if you please, his final victory over the oppressor Opium, achieved after years of battle, brave and resolute, now one, now the other gaining the upper hand; and consider, too, the frightful penalty paid by him in the misery entailed upon him by this pernicious habit, and then condemn him if you can.

There is still another reason why we should bear with this weakness of De Quincey; namely, that it is due to his suffering that we have many of his works. Perhaps we may go further and say that, without suffering, he never would have risen to the elevation of tone which distinguishes him. It is a noteworthy fact that many of the greatest works known to the world have been produced by suffering. Your evenly prosperous man may be pretty and, after a manner, grand, but he cannot rise to sublimity, he cannot fathom the heart's depths; he has never been in those regions himself, how then can he show them to us? Other great writers—Homer, Dante, Tasso, Shakspeare, Milton, Schiller—did not lead lives of unbroken prosperity. They knew the dark valleys of sorrow and woe as well as the sun-lit mountains of joy and success.

The truly great writers, then, as well as the great musicians, knew life in all its forms; and they have brought forth accordingly: they have written for all time, and will be loved to all time. On these three grounds we rest our defence of De Quincey: the work brought forth by suffering; the circumstances by which he was surrounded; and the good done by the noble and Christian tone of his writings. And, as when from the top of some lofty mountain we let our eye wander over the vast prospect spread out before us, we are unable to perceive the low hovels, the sluggish pools, the ditches, the muddy roads, the mire, because we are occupied in observing the noble hills, the far-reaching valleys, the rugged grandeur of the rocks, the dashing spray of the cataract; or, if in the distance appears a city with magnificent temples and shining roofs, the mighty work of civilization standing side by side with the work of nature, each heightening the effect of the other—so, in regarding a great intellect, his foibles, faults, errors, nay, even crimes, should sink into insignificance, and we should delight to behold only his glories and excellences.

ART. V.—1. *Elements of Geology.* By Sir CHARLES LYELL, F.R.S. Greatly enlarged and illustrated with 770 woodcuts. 1 vol. 8vo., pp. 803. New York: D. Appleton & Co. 1866.

2. *Theory of the Earth, with Proofs and Illustrations.* By JAMES HUTTON, M.D., F.R.S. 2 vols. 8vo. Edinburgh. 1795.

3. *Traité Elémentaire de Géologie.* By M. ROZET. Paris. 1835.

4. *The World Before the Deluge.* By LOUIS FIGUIER. The Geological Portion carefully revised and much Original Matter added. By HENRY W. BRISTOW, F.R.S. Illustrated. English Translation. 8vo., pp. 449. New York: D. Appleton & Co. 1869.

5. *Primitive Man.* By LOUIS FIGUIER. Revised Translation. Illustrated with 30 scenes of Primitive Life, and 233 figures of objects belonging to Pre-historic Ages. pp. 348. New York: D. Appleton & Co. 1870.

6. *Illustrations of the Huttonian Theory of the Earth.* By JOHN PLAYFAIR, F.R.S. Edinburgh. 1802.

SCIENCE is founded on the unchangeableness of the laws of nature. Were the laws which control natural phenomena not thus fixed, the facts of to-day and those of to-morrow could not be compared with any certainty of arriving at a correct conclusion respecting the facts which had been, or might be, observed on any other day or at any other period. Although we occasionally hear some express doubts with respect to the fixed character of natural laws, yet we find people instinctively basing their conclusions in relation to *future* natural phenomena on the invariableness of those laws which control them. But if we assume that the laws which control any class of phenomena, mental or physical, are the same at all times, past, present, and future, we may reason upon the facts ob-

served at any time, and deduce satisfactory conclusions respecting that part of the universe to which the phenomena relate. All the sciences are based upon this assumption. Even language, apparently the most changeable in its detail of all things, is known to be subject to the same fixed laws. The full recognition of the truth that all natural laws are fixed, never have been, never will be, and, perhaps we ought to say, never can be changed, will save mankind from many an error of reasoning, and it will serve as the surest guide, other necessary data being given, to the great truths of nature. No one thinks of raising a doubt about the invariableness of what are known as astronomical laws, nor of the known laws of mechanics and other branches of natural philosophy. But grave doubts are sometimes raised respecting the fixed nature of moral and religious laws In other words, man doubts the unchangeableness of such laws as he knows least about.

But let us see what light abstract reasoning will throw on this question of the fixed character of the laws of nature. We are sometimes told that all things are possible with God. That is, to an infinite being all things are possible; a moment's thought, however, will tell us that some things, at least, are impossible. Thus, two things cannot occupy the same place at the same time, nor can one thing occupy more than one position at one time; a thing cannot be round and square at one time, and so on, for others. But these are so plain, that the reverse seems absurd. It is also as easily seen that twice one make two, and it is impossible for it to be otherwise. But it is not so apparent that the sum of the three angles of every plane triangle is equal to two right angles; still, a certain course of reasoning demonstrates the truth of the proposition, and we learn that it is impossible for it to be otherwise. We learn further, that all mathematical laws, of whatever kind, are fixed laws; we know that these mathematical laws correctly represent the laws of nature, so far as we have yet been able to apply them to the tracing out of the phenomena of the

natural world. May we not then conclude that, so far, at least, the laws controlling the phenomena of the physical universe are equally fixed? If we would spread a given quantity of liquid over similar surfaces, the amount on any given space would be regulated by Newton's law of gravity. As the mind and body of man are each subject to laws peculiar to itself, so the mental and the physical universe have each its own peculiar and inherent laws by which they are controlled and adapted to each other.

Among the sciences, none seem to ask for greater admissions in relation to what we have said of the unchangeableness of nature's laws than geology. The forces which produced, and still produce the phenomena observable in the crust of the earth, may have been greater during one period of the world's physical history than at another, but still they differed in no other respect. Geology, as a science, is of comparatively recent date, because it took man many centuries to learn the great truth which we have stated respecting the laws of nature, and that the only method of arriving at absolute truth is to observe facts, and to investigate their relation to one another.

Astronomy is the most sublime of all the sciences, because it takes in the physical universe as a whole, and investigates the laws which control it, the influences of one part on another, and the forms of bodies in their entireness. Next to astronomy, for the magnitude and sublimity of the objects which it considers, we must rank geology, since it treats of and investigates, the formation and structure of a world—the earth. The former science takes our world when, at some remote period of past time, with the other members of our solar system, it was floating as a shapeless, gaseous cloud through cosmical space, traces its changes of form and constitution till, in a spheroidal shape, it turned on its axis, and at the same time was carried around the parent sun by the central attraction of that great luminary, and the impulse which it had received according to the laws of condensing bodies. At this period in

its formation, and when it was still liquid from the action of heat, the science of Geology takes it and traces the various changes through which it passed in the process of cooling—the formation of a crust, the irregularities of surface, the upheaval of mountains, the separation of the ocean from the land, the changes produced in the conformation of these by the wearing down of the solid parts by the action of the air and water, the building up of islands and coasts by the coral insect, and the other changes to which it has been subject through immense periods of time, till it was fitted for the habitation of man, and even down to the present moment.* Thus we see that geological science but continues the investigation of those laws and phenomena in detail which astronomy recognized only as a whole. We readily infer that the former science has had, and still has, many difficulties to encounter, owing to the impossibility of making observations in all parts of the earth, with which the latter never had to contend.

Geology may be further defined as the science which investigates the changes which have successively taken place in the inorganic and the organic kingdoms of nature, the causes of these changes, and the influence which these have had in modifying the surface and external structure of the earth. In this science we cannot draw our data from historical records, but we must observe all, or as many of the facts as may be presented in different regions of the earth, and then, for further information, we must extort from nature, by experiment, what she does not so readily yield without it. It is by observations of this kind that we have to assure ourselves that there exists the true materials for a physical history of our planet. We see in the sand or chalk-pit, the stone-quarry, or any place where the rocks are laid bare, an order of arrangement, which, if studied, would throw much light on the structure of the earth. "But it may be said, and with great reason, that the mere fact of order in the arrangement of these superficial materials proves nothing more than that they were deposited in

* See Figuier's "*Primitive Man*," ch. i.

succession, and they might either have been so placed at the first creation of the world, or, since the whole bears marks of aqueous action and of disturbances, that the successive beds may have arranged themselves as we find them during some great deluge. But the possibility of this is contradicted by appearances presented to the observer of nature at every turn, and by the result of every investigation, however superficial, when the actual structure of the earth is laid open, whether in the quarry or the sea-cliff."*

Man, in all ages of the world, since his advancement in civilization has enabled him to leave a record of his thoughts, has sought for the origin of things. Usually, however, instead of observing the phenomena of nature to see what they indicate, he has been more disposed to frame hypotheses as to what nature was supposed to conform. Some of these, whose origin dates many centuries back, have descended to us, and they are still regarded by many as giving the true history of creation. In India and Egypt the earliest doctrines of their schools of philosophy agreed in ascribing the first creation to an infinite Being. They represented this Being as having existed from all eternity, and many times destroyed and reproduced the world and its inhabitants. "There are creations, also, and destructions of worlds innumerable; the Being, supremely exalted, performs all this with as much ease as if in sport, again and again, for the sake of conferring happiness."† Whatever may be our opinion respecting these statements, the ordinances of Menù do contain some astronnomical facts, and we see some foreshadowings, as in the above passage, of a knowledge of geological principles and revolutions. Fossil remains in the different strata of rocks are so abundant, that they could hardly have escaped the notice of the observers of nature among the eastern nations. It is known that the Egyptian priests knew not only that the soil

* Anstiel's *Ancient World*, p. 21. See also Figuier's "*World Before the Deluge*," p. 29 *et seq.*

† *Institutes of Hindoo Law; or, the Ordinances of Menù;* from the Sanscrit. Translated by Sir William Jones.

beneath the plains of the Nile, but also the hills bounding the great valley, contained marine shells.* "But although the Bramins, like the priests of Egypt," says Lyell, "may have been acquainted with the existence of fossil remains in the strata, it is possible that the doctrine of successive destructions and renovations of the world merely received corroboration from such proofs; and that it may have been originally handed down, like the religious traditions of most nations, from a ruder state of society. The system may have had its source in exaggerated accounts of those partial, but often dreadful, catastrophes which are sometimes occasioned by particular combinations of natural causes. Floods and volcanic eruptions, the agency of water and fire, are the chief instruments of devastation on our globe."†

According to Chinese tradition, there was an extensive flood in their country in the period of Yaou, two thousand years before our era, which, according to some persons, is the same as the Deluge described in the Old Testament;‡ but, according to Mr. Davis,‖ the Chinese flood rather interrupted the business of agriculture than involved the general destruction of the human race. According to their record, the flood was nothing more, very probably, than an aggravation of the natural condition of these low countries through which the Yellow river and canal now flow. "Were they," says Davis, "both of them to burst their banks at present, the deluge of Yaou would be repeated." Humboldt found in South America that "the Indians celebrated, after the ideas of an antique superstition, by festivals and dancing, the destruction of the world and the approaching epoch of its regeneration.§

These accounts will serve to show that different nations, in the early ages of the progress of thought, probably saw sufficient indications in the structure of the earth of great revolu-

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* Herodotus' *Euterpe*, 12. † *Principles of Geology*, vol. i, p. 22.

‡ See Figuier's "*World Before the Deluge*," p 424.

‖ *The Chinese*, by John Francis Davis, Esq., F.R.S., vol. i, p. 130.

§ Humboldt and Bonpland, *Voy. Relat. Hist.*, vol i, p. 30.

tions in nature, which had important bearings on the welfare of the human race. We find similar ideas respecting the laws which govern the universe among the ancient Egyptians, namely, the former successive destruction and renovation of the world on which we live.*

Strange as it may appear, we find the idea, which is still extensively entertained of man's fall, or at least gradual decline from a state of moral purity and happiness and his subsequent great wickedness, which was followed by his destruction through some great calamity in nature, existing among the ancient Egyptians. This connection between moral debasement and physical catastrophes is more intimate and natural than we might at first suppose. Man, when ignorant of the laws by which the universe is governed, regards himself as the special object of attention of the Governor of the world, and that the transgression of his moral laws is visited by some punishment which frequently takes the form of physical calamities that oftentimes result in great revolutions in the conformation of the earth. The progress of knowledge has scarcely yet dissipated these absurd notions. A respectable writer on moral, educational, and scientific subjects, of the former half of the present century, speaks of earthquakes and volcanoes as being the result of the "fall of man." Even geologists, that wrote about the same time, attributed to the Noachian deluge—a consequence of man's fall and moral depravity—many of the phenomena of the physical structure of our globe, now classed under the head of drift.

According to Ovid,† the doctrine of Pythagoras was that "nothing perishes in this world, but things mostly vary and change their form." Some of his illustrations are as follows: "Solid land has been converted into sea, and sea has been changed into land. Marine shells are found far from the ocean. Valleys have been excavated by running water, and floods have washed down hills into the sea. Springs have been dried

* See Prichard's *Egypt. Mythology*, p. 177. † *Metamor*, lib. 15.

up and new ones formed during earthquakes. Rivers have deserted their ancient beds and have flown elsewhere. Islands have become connected with the main land, by the growth of deltas. Peninsulas have been divided from the main land, and have thus become islands. Land has been submerged by earthquakes, and numerous other changes are mentioned, showing an actual knowledge of natural phenomena."

We find also that Aristotle and Strabo both possessed many correct ideas respecting the changes which the earth's surface has experienced, and which are still going forward. The former says that the distribution of land and sea in particular regions does not always remain the same, but that the sea changes into land and the land becomes sea. The latter, after examining some of the theories then entertained by different philosophers to account for the changes observable in the conformation of the land and water, and finding them insufficient, propounds one of his own, which geologists now recognize as true to nature. He says that the same land is sometimes raised up and sometimes depressed, which causes the sea to change its bed and thus expose its bottom to observation.

We have now given in brief the opinions entertained before our era respecting the revolutions which the earth had undergone. We see that hypotheses, rather than the results of observations, constituted the principal geological knowledge.

After the fall of the Roman empire, the Saracens became the cultivators of physical science in the old world. Geology as well as astronomy is indebted to their exertions to extend the domain of scientific knowledge. A few only of the early Arabian works have descended to us. A treatise "On the Formation and Classification of Minerals," by the learned physician Svicenna, and another "On the Cause of Mountains," which forms the second chapter of the same work, speak of mountains as having been formed, some by essential, and others by accidental, causes. "A violent earthquake, by which land is elevated and becomes a mountain," is an essential cause; and among the accidental causes he

instances as the principal, the excavation of valleys by water, by which the land is made to stand out and form eminences. Other Arabian writers added something on geological phenomena, especially Mohammed Kazivini, who flourished about the close of the thirteenth century of our era. In his work, entitled the "Wonders of Nature," is found the following very beautiful passage, the narrations of Khidhz, an allegorical personage. We copy it as given by Lyell:

"I passed one day," says Khidhz, "by a very ancient and wonderfully-populous city, and asked one of its inhabitants how long it had been founded. 'It is indeed a mighty city,' replied he—'we know not how long it has existed, and our ancestors were on this subject as ignorant as ourselves.' Five centuries afterwards, as I passed by the same place, I could not perceive the slightest vestige of the city. I demanded of a peasant, who was gathering herbs upon its former site, how long it had been destroyed. 'In sooth, a strange question,' replied he. 'The ground here has never been different from what you behold it.'—'Was there not of old,' said I, 'a splendid city here?'—'Never,' answered he, 'so far as we have seen, and never did our fathers speak to us of any such.' On my return there, five hundred years afterwards, *I found the sea in the same place*, and on its shores were a party of fishermen, of whom I enquired how long the land had been covered by the waters. 'Is this a question,' said they, 'for a man like you? This spot has always been what it is now.' I again returned, five hundred years afterwards, and the sea had disappeared. I enquired of a man, who stood alone upon the spot, how long ago this change had taken place, and he gave me the same answer as I had received before. Lastly, on coming back again after an equal lapse of time, I found there a flourishing city, more populous and more rich in beautiful buildings than the city I had seen the first time; and when I would fain have informed myself concerning its origin, the inhabitants answered me: 'Its rise is lost in remote antiquity; we are ignorant how long it has existed, and our fathers were on this subject as ignorant as ourselves.'"

Geology did not seem to attract the attention of Christian nations till the earlier part of the sixteenth century. Marine shells then gave rise in Italy to a spirited controversy respecting their origin, and it extended also to other organic remains found in the strata of that peninsula. An idea prevailed to some extent at that time that a certain "plastic force" had

the power to transform stones into organized fossils. Fracastoro exposed the absurdity of this notion, and gave it as his opinion that all fossil shells had once belonged to living animals. He also demonstrated the futility of attributing to the Noachian deluge the situation of the organic remains in question—an hypothesis obstinately defended by many. These two problems—whether organized fossils had ever belonged to living animals, and, if so, whether they had been deposited by and during the Mosaic flood or not—notwithstanding Fracastoro's clear exposition of the evidence in relation to the questions, continued to be discussed for three hundred years longer, or till the beginning of the nineteenth century.*

The discussion on fossil shells and other organic remains brought into the field many writers on the subject; and instead of appealing to the observation of facts as they are presented in nature, some of the most absurd theories were proposed and attempted to be sustained by their authors, simply by the force of reasoning from assumed data. "The theologians who now entered into the field in Italy, Germany, France, and England," says Lyell, "were innumerable; and, henceforward, they who refused to subscribe to the position that all marine organic remains were proofs of the Mosaic deluge were exposed to the imputation of disbelieving the whole of the sacred writings. Scarcely any step had been made in approximating to sound theories since the time of Fracastoro, more than a hundred years having been lost in writing down the dogma that organized fossils were mere sports of nature. An additional period of a century and a half was now destined to be consumed in exploding the hypothesis that organized fossils had all been buried in the solid strata by the Noachian flood. Never did a theoretical fallacy, in any branch of science, interfere more seriously with accurate observation and the systematic classification of facts."† The rapid progress which geology has made in

* See '*World Before the Deluge*," p. 369 *et seq.*

† *Principles of Geology*, vol. i, p. 42.

recent times is chiefly attributable to the careful determination of the order of succession in the strata, by means of their different organic remains, and to their regular position.

We must now pass over more than a century in the history of geology, by doing little more than mentioning the names of the principal individuals who contributed, either by their observations or their writings, to the progress of the science.

The great mathematician, Liebnitz, published his "Protogœa" in 1680. He imagined a time when this world was a burning, luminous mass, and that it has been refrigerating ever since its creation. This hypothesis, corresponding very closely with the modern theory, of which more hereafter, we need not enlarge upon here. The distinguished mathematician and natural philosopher, Robert Hooke, wrote and lectured considerably on the subject of geology. He says: "However trivial a thing a rotten shell may appear to some, yet these monuments of nature are more certain tokens of antiquity than coins or medals, since the best of these may be counterfeited or made by art and design, as may also books, manuscripts, and inscriptions, as all the learned are now sufficiently satisfied has often been actually practised."* He argued, also, that nature had not formed fossil bodies "for no other end than to play the mimic in the mineral kingdom," but that they are what they appear to be—"the several bodies they represent, or the mouldings of them petrified."† Hooke declared the prevailing hypothesis of the day—namely, that all marine fossils were to be referred to Noah's flood—to be wholly untenable, and, in its stead, he proposed another equally as unfounded in nature.‡

Burnet, Ray, and Woodward, contemporaries of Hooke, also wrote about the formation and structure of the earth; but as the deluge of Noah was called in to explain the greater part of geologic phenomena, we need not refer to their the-

* Posth. Works, Lecture, Feb. 29, 1688.

† Lecture, Feb. 15, 1688. ‡ See his Posth. Works, p. 410.

ories, especially since geologists long ago became satisfied that no historical flood has had any influence in the production of the phenomena observed in the earth's crust. But we must not omit to mention Whiston's fanciful hypothesis, which was proposed about the same time (1696), to account for the deluge of the Old Testament, that catastrophe being the cause of those phenomena which we observe in the crust of the earth. It is well known that the great comet of 1680 had only a few years before passed its perihelion, and astonished the "gazing nations by his fiery train of length enormous." Whiston seized upon that celestial visitor as a fit instrument in the hands of the Deity for producing the flood which is supposed to have drowned the whole earth. He supposed that great comet to have approached so near our world, at a former return to our system, that the atmospheres of the comet and the earth intermingled, and the result was a sudden condensation of the aqueous vapors of which he supposed the comet to be principally composed, and Noah's flood was the result. Since the rain continued forty days and the waters covered the highest mountains, which we know to be more than five miles, during Whiston's shower thus produced the rain fell at the rate of thirty feet to the hour! We need hardly add that Whiston's hypothesis has no foundation in nature.*

In 1749, Buffon made known his theoretical views in relation to the former changes of the earth, by the publication of his "Natural History." He assumed an original volcanic nucleous and a universal ocean, like Leibnitz. He supposed the highest mountains once covered by this aqueous envelop. Horizontal strata were then formed by the action of powerful marine currents, which washed away the solid matter in some parts and deposited it in others; and in some places deep submarine valleys were the result of this action. The ocean settling into these hollows, its level was depressed, and thus

* See Whiston's *New Theory of the Earth;* wherein the Creation of the World in Six Days, the Universal Deluge, and the General Conflagration, as laid down in the Holy Scriptures, are shown to be perfectly agreeable to Reason and Philosophy.

certain elevated parts of the bottom of the ocean were left dry, forming islands and continents. He imagined the strata to be generally horizontal, and he supposed that those which contained organic remains had never been disturbed since their deposition—parts of his theory which a little observation would have corrected. Buffon was not an original observer in geology, and he added but little to what had been before done in the way of observing facts and reasoning upon them; but his genius, the eloquence of his style, and the boldness of his speculations did much to awaken curiosity, and to stimulate a spirit of enquiry among his countrymen.*

In 1756, Lehman, a German mineralogist, published a work in which he divided mountains into three classes; those formed with the world, and before the creation of organized bodies; those which resulted from a partial destruction of the primary rocks by a general revolution; and, lastly, those produced by local revolutions, and in part by the flood of Noah.†

During the year 1760, the Rev. John Michell, Woodwardian Professor of Mineralogy at Cambridge, published in the "Philosophical Transactions" an "Essay on the Cause and Phenomena of Earthquakes." His attention was drawn to the subject by the great earthquake at Lisbon in 1755. This writer had a truly philosophical mind, and he advanced many new and original views. "Some of Michell's observations," says Lyell, "anticipate in so remarkable a manner the theories established forty years afterwards, that his writings would probably have formed an era in the science if his researches had been uninterrupted."‡ Michell's scientific writings were free from theology, but some of his contemporaries were still at work upon the connection between the Noachian deluge and geologic phenomena. The existence of the earth for a greater period than about six thousand years could scarcely be admitted by physico-theological writers; and yet, if only existing causes

* See his *Natural History*.

† See *Essai d'une Hist. Nat. des Couches de la Terre*.

‡ *Principles of Geology*, vol. i. p. 59.

were considered as having produced the appearances observed in the crust of the earth, ten or a hundred times that period might be required. Thus there was a struggle continued through several centuries between those who believed in the hypothesis which limited the former duration of the earth to a comparatively short period of time, and such as based their conclusions on actual phenomena observed in the natural world. We see in nature no limitation in regard to time. Results are produced by the least possible expenditure of force, because in this element there seems to be a limitation; but, in the element time, there are absolutely no boundaries. In investigating the former changes of the earth, then, we need only enquire whether or not such causes could produce them with any regard to the times required in nature for their production.*

Towards the close of the eighteenth century, the necessity for the progress of positive knowledge of distinguishing the mineral masses of the globe into several groups became generally apparent. The labors of Pallas and Saussure contributed most to this end. The former, after he had made a careful examination of the two great mountain chains of Siberia, announced the result that granite was in the middle, the schistose next, at the sides, and the limestone outside of those. He prepared a memoir on the fossil bones of Siberia, which attracted attention to some of the most remarkable phenomena in geology. He stated that he had found a rhinoceros entire in the frozen soil.† The four mammoths since found on the shores of the Arctic ocean, in the Russian empire, remove all doubts respecting the discovery. Saussure gave his attention to an examination of the structure of the Alps and the Jura, and the data he thus collected proved very valuable to those who followed him.‡

* Of course, if we wish to know how rapidly or how slowly nature works, we may institute a series of observations to determine this element, which may then serve to correct hypothetical historical periods of time.

† See *Eloge de Pallas*, Cuvier. See also Figuier's "*World Before the Deluge*," *passim*.

‡ *Voyage dans les Alpes*, 1779.

In the year 1775 Worner was appointed professor of mining in the School of Mines at Freyburg, in Saxony; Pallas and Saussure gave but little theorizing or deducing logical results from the data which they collected; but Worner attempted to classify and co-ordinate facts, and to describe them in definite language, and he gave to the science the name *geognosy* in contradistinction to geology, which, up to that time, was little more than an assemblage of conjectures and hypotheses. Worner adopted the conclusion that the granite and the other crystalline rocks are marine deposits, like the stratified and fossiliferous rocks. At a remote period in the world's history the different materials from which the strata were derived were either dissolved or held in solution in the ocean. From this chaotic ocean, according to Worner, all the strata were, one after another, precipitated, some by chemical and others by mechanical means. When this solution covered the whole earth, and was of great depth, it was tranquil and pure. For this reason the first rocks were chemically precipitated and exclusively crystalline. Afterwards, when the bed of the ocean was in some way lowered, and land began to appear, currents were produced, which wore away by atmospheric agencies, and thus mechanical deposits were formed and even became abundant. Worner wrote but little, and we get his views principally through the writings of his pupils and followers. He was strongly prejudiced in favor of his own theories. "The internal activity of the globe is completely disregarded as well in respect to the formation of crystalline rocks and metalliferous deposits, as to its being the cause of the dislocations undergone by the stratified deposits of all ages." All the strata, according to his system, were produced at their origin as they now exist.*

James Hutton, M.D., a contemporary of Worner, but a native of Scotland, came to opposite conclusions on certain

* His first work was entitled, *Theory of the Earth; or, an Investigation of the Laws Observable in the Composition, Dissolution, and Restoration of Land upon the Globe.* It was read the 7th of March and the 4th of April, 1785, before the Royal Society of Edinburgh.

fundamental phenomena, and thus two antagonistic schools were established. Hutton resided at Edinburgh, where he enjoyed the society of many men of high attainments, who loved him for the simplicity of his manners and the sincerity of his character. He had been educated as a physician, but he declined the practice of medicine, and resolved to give his undivided attention to scientific pursuits. He made frequent tours through England and Scotland, and collected many facts. After maturing his views he published, in 1785, his "Theory of the Earth."* Ten years later, after having made several journeys in Scotland to collect new facts, he developed his ideas in a larger work having the same general title.† In this work it was for the first time declared that geology is in no way concerned about "questions as to the origin of things." He endeavored, by laying aside all hypothetical causes, to explain all the former changes observable in the earth's crust wholly by the action of natural agents. Hutton's desire was to give fixed principles to geology, as Newton had done to astronomy, but the time had not yet arrived—the necessary data had not yet been collected.

"The ruins of an older world are visible in the present structure of our planet," said Hutton; "and the strata which now compose our continents have been once beneath the sea, and were formed out of the waste of pre-existing continents." He argued that the same forces are still destroying, by chemical and mechanical action, even the hardest rocks, and transporting the *débris* to the sea, where it spreads out and forms strata analogous to those of a more ancient date. "Although loosely deposited along the bottom of the ocean, they become afterwards altered and consolidated by volcanic heat, and then heaved up, fractured and contorted."

Hutton had never explored any region of active volcanoes, yet his observations on the phenomena presented by basalt, and other trap-rocks, convinced him that they are of igneous

* *Annales des Mines*, 5th series, vol. 16, pp. 155-171.

† *Phil. Transactions*, Edinburgh, 1788.

origin, and that many of them had been injected, when in a melted state, through fissures in the older strata. The different aspect which these rocks presented from ordinary lava, he attributed to their having cooled down under the pressure of the ocean. To remove the objections brought against this part of the theory, Hutton's friend and disciple, Sir James Hall, instituted a series of highly important and useful experiments on the influence of pressure on matter while cooling down from a molten state. These experiments served to confirm Hutton's conclusions. The absence of stratification in granite, and its similarity in mineral character to such rocks as he considered of igneous origin, led him also to conclude that granite must have been formed from matter in a state of fusion—a conclusion which observation has since fully established as correct.

Hutton saw "in the economy of the world no traces of a beginning, no prospects of an end." This fact, together with his hypothesis that all former changes on our globe were produced by existing causes, seemed rather startling to the theologian, who regarded the earth as being but a few thousand years old, and all its prior changes as having been brought about by violent causes in a small space of time. He was not altogether correct in some of his explanations of the causes of geological phenomena. Indeed, he had made no step beyond Hooke, Moro, and Raspe, in showing in what manner the laws at present governing subterranean movements might bring about geological changes, if sufficient time be allowed. He imagined that the continents were first gradually destroyed by aqueous degradation; and when their ruins had thus furnished the materials for new continents, they were again up-heaved by violent convulsions. Thus his theory required alternate periods of disturbance and repose.* Such appeared to him to be the order of nature.

The Huttonian system became, perhaps, more widely

* *Phil. Trans.*, vol. vi, Edinburgh, 1812. Account of a series of experiments showing the effects of compression in modifying the action of heat The paper was read June 3,1805.

known through the writings of his disciple, John Playfair, who was at the same time a profound mathematician, an eminent geologist, and a distinguished writer. His talent for exposition, and his elegance of style, vigorously sustained the new doctrine, not only against the violent attacks of the few that accorded to it a serious consideration, but also against the disdainful indifference of the majority by whom it was regarded as unfounded.* The labors of Hutton and his disciples did not become known to any extent on the continent of Europe till after the year 1815, when the relations of Great Britain with the rest of Europe were again established. At this time a French translation of Playfair's works appeared in Paris, thirteen years after their publication in Edinburgh. A few years afterward (1822) Dr. Boué, who had studied geology in the Scottish capital, contributed to propogate these new ideas. Sir Charles Lyell has done much, by elegantly-written works,† to make known the Huttonian doctrine. In 1825 he summed up, under the name *metamorphism*,—a term since generally employed—the changes which, according to this doctrine, the rocks of sedimentary origin have undergone by the action of central heat.

Since geology does not altogether harmonize with certain theological, cosmogonical, and cosmological ideas entertained by many, because it carries the origin of the earth back almost indefinitely, and sees no termination to its existence, we may be permitted to quote from Playfair's works a passage relating to this point:

"In the planetary motions, where geometry has carried the eye so far, both into the future and the past, we discover no mark either of the commencement or termination of the present order. It is unreasonable, indeed, to suppose that such works should anywhere exist. The Author of Nature has not given laws to the universe which, like the institutions of men, carry in themselves the elements of their own destruction. He has not permitted in his works any symptom of infancy or old age, or any sign by which we may estimate either their

* See Playfair's *Illustrations of the Huttonian Theory of the Earth.*

† See his *Elements of Geology* and *Principles of Geology.*

future or their past duration. He may put an end, as he no doubt gave a beginning, to the present system, at some determinate period of time; but we may rest assured that this great catastrophe will not be brought about by the laws now existing, and that it is not indicated by any thing which we perceive."*

At one time the controversy between the Volcanists and Neptunists was carried to that extent which made these names terms of reproach; and the two parties, instead of devoting their time to the collection of facts, gave their attention more especially to searching for arguments to strengthen their own cause, or to disprove that of their opponents. Fortunately, for the progress of geology, a new school at length arose, that professed to be strictly neutral with respect to the two antagonistic systems of Worner and Hutton. Their sole object was to devote their attention to observation and the collection of facts. Thus they thought to lay the foundation for a system that would accord more nearly with the actual system of nature. "The reaction, provoked by the intemperance of the conflicting parties," says Lyell, "now produced extreme caution. Speculative views were discountenanced, and, through fear of exposing themselves to the suspicion of a bias towards the dogmas of a party, some geologists became anxious to entertain no opinion whatever on the causes of phenomena, and were inclined to scepticism, even where the conclusions deducible from observed facts scarcely admitted of reasonable doubt." Though this reluctance to theorize was perhaps carried to excess, yet this measure proved very salutary at that time. A large amount of new data was required, and the Geological Society of London, which was founded in 1807, contributed much to the attainment of so desirable an end. To multiply, extend, and record observations, and patiently wait for the result at some future time, was what the society proposed to do. It was claimed that the time had not yet arrived to frame a correct "Theory of the Earth." By acting up to these principles, the members had the satisfaction, in a few years, of knowing that they had

* Vol. iv, p. 55.

rescued the science from the imputation of being theologically dangerous, or, at the best, but a visionary pursuit.

Geology, like every other science, has found theological prejudices, growing out of ignorance, to be its greatest obstacle to advancement. Man is singularly tenacious of those ideas which were impressed upon his mind while young, especially those pertaining to religion or theology, and since the former is generally regarded as intimately connected with the cosmogony of the earth, if not founded upon it, the theologian seems always to be in fear that some new science will prove his religious system false, or in some way injure the moral and religious prospects of the human race.* A little consideration ought to teach the man of reason that no new science, nor discovery of any kind, can prove truth to be otherwise than truth. It must stand the severest test.

The main principles of the science of geology are now well established. The order of the superposition of strata is well settled, and the adaptation of races of beings to the conditions which surrounded them during the progress of the formation of the earth is a fact no longer disputed; and this great principle is now one of the most important in geology, since it enables the geologist to determine the relative positions and the character of the strata, as well as the physical conditions which prevailed at the time they were deposited, from the character of the fossil remains which they contain.

The intimate connection of the physical sciences becomes more and more apparent as new discoveries in them are made. Many things discoverable in the solar system and the sidereal heavens, and especially a condition of matter—the gaseous—revealed by the spectroscope, and existing apparently in all parts of the inter-stellar spaces, lead almost directly to the

* We believe that the sentiment of religion is inherent in the human mind, and is in no way connected with the disputed question, as to whether the earth was made in six days or in as many myriads of years. Theologians, by attaching to their religious systems disputed points in science, have always brought upon themselves more or less trouble, as new discoveries have shown that certain things admitted as truth at one time have really no foundation in nature. The truth of the Christian religion is not dependent on the correctness of the Mosaic cosmogony.

conclusion that this earth was not only once a molten mass, but, prior to that, even in a state of vapor. Geological facts point as directly to a time—perhaps millions of years in the past—when all the solid parts of this terrestrial globe were in a melted state. These data have served as the foundation of a theory of the earth which, with a few exceptions, is admitted by geologists as being a near approximation to the truth. This theory is connected directly with the nebular hypothesis in astronomy.* According to this theory the earth was once a gaseous spheroid, which, by refrigeration, was reduced in dimensions, and, in the course of time—necessarily requiring an immense number of ages—it so far cooled down as to have a crust, differing, probably, in thickness and tenacity in different parts, according to the nature of the materials of which the different parts were composed. In this manner a *succession* of thin solid crusts were formed, each, in its turn, shrinking and cracking, until at length a certain balance would be reached between the thickness of the crust and the rate of cooling and the amount of internal heat, when a rough, uneven surface would be left, having many elevations and depressions. By this time its temperature would be sufficiently reduced to allow of the existence of an ocean of water, and of an atmosphere of permanent gases and of aqueous vapor, the former necessarily settling into the hollows, forming seas of greater or less depths, and the latter surrounding the youthful earth, as the existing atmosphere now does. Both the liquid ocean and the gaseous atmosphere would necessarily, from the close proximity to the molten interior, be much elevated in temperature, and being constantly in motion, through the action of the attractive influence of the sun and moon, producing tides, and the rotary motion of the earth, combined with a difference of temperature, producing currents, these envelopes would have a powerful disintegrating effect on the solid parts of the globe with which they came in contact. It is somewhat probable that great storms, in the form of

* See the *National Quarterly Review*, No. xxxii, Article vi.

hurricanes, would frequently arise, producing great relative changes in the land and water.*

Up to this period the establishment of a sea, and perhaps long afterwards, no organic beings could probably exist; since we are not aware that either animal or vegetable can exist and perform its functions in water or on land at the temperature of boiling water† (212° Fah.) According to this theory, then, the first period of the earth's existence was marked by a chaotic condition of things consequent upon igneous fusion and characterized by frequent disturbances of the surface as a result of the cooling from such a state.

Since the earth now had a crust of only comparatively few miles in thickness, the lowest, or rather the foundation rocks, should be of a crystalline character, without any evidence of stratification. This is actually found to be the case; for granite is admitted upon all hands to be the lowest or first-formed rocks in the whole series composing the earth's crust.‡ These crystalline rocks now forming the shell or surface which separates the ocean and atmosphere from the melted interior, the various operations of atmospheric, aqueous, and igneous agencies would be set in motion to modify the newly-formed crust, and to produce all that long series of changes which it is the province of geology to consider.

The rains which fell upon the granitic crust, the streams which descended from the mountains, and the rivers which wore their way through its gorges and valleys, would all wear down and carry away the abraded materials to a lower level,

* "Ocean, unequal press'd, with broken tide
And blind commotion heaves, while from the shore,
Eat into caverns by the restless wave,
o o o o comes a voice,
That solemn sounding bids the world prepare;
Then issues forth the storm with sudden burst,
And hurls the whole precipitated air
Down in a torrent. On the passive main
Descends the ethereal force, and with strong gust
Turns from its bottom the discolor'd deep."—THOMPSON.

† At a temperature not much short of this, however, it is known that certain small animalcules, and some of higher organization, seem to be capable of enjoying life.

‡ Page's *Geology*, p. 97.

where they would be deposited in stratified beds, differing but little however, in mineral composition from the rocks whence they were derived. On account of the unstable condition of the surface, while the levelling agencies to which we have referred were forming stratified rocks, the igneous forces would be elevating some parts of the surface, and in some instances the interior melted matter would burst through volcanically, and overflow the stratified deposits. On this account it is sometimes difficult to distinguish the earliest stratified rocks.

Up to this condition of things there is little or no evidence of the existence of animal or vegetable life. All was bare and desolate; "not a moss nor a lichen covered the naked skeleton of the globe; not a seaweed floated in the broad ocean; not a trace existed even of the least highly organized animal or vegetable; everything was still, and with the stillness of absolute death. The earth was indeed prepared, and the fiat of creation had gone forth; but there was as yet no inhabitant, and no being endowed with life had been introduced to perform its part in the great mystery of Creation."

The era of the clay-slate and grauwacke system followed. During the period embraced by these rocks, important events in the history of our planet took place. Mineralogically speaking, these rocks differ materially from those of previous systems. The crystalline texture among them is very faint. Stratification is now very obvious, with frequent alterations of sandstones, conglomerates, shales, and limestones. All this proves the great diversity of action, such as rivers, currents, tides, and waves; the deposition in calm water, and accumulations by violent inundations. Here the geologist for the first time in the physical history of the earth finds the remains of organic existence. These remains are those of lowly-organized seaweeds, zoophytes, and mollusca. The character of these teaches the geologist the relative depth of the sea and the nature of the bottom, as well as the kind of material held in solution in the water.

The next series of strata in order were the silurian of Mr. Murchison, and the old red sandstone. These strata are still more decidedly sedimentary than any of the former. They are composed of sandstones, conglomerates, shales, clays, and limestones, alternating with one another in such a manner as to show that numerous agents were active in their formation. Mr. Murchison has illustrated the silurian system, and Mr. Hugh Miller has written a very interesting and instructive volume on the old red sandstone formations.

After these formations, there followed in immediate succession one of the most interesting and peculiar eras in the geological history of our globe; we mean the carboniferous system. At the close of the old red sandstone period, the physical character of the earth seems to have undergone almost a total change. The red sandstone and gravelly conglomerates which had been formed along the shores of the bottom of the sea were upheaved into dry land. The limestones, fossil shell-beds, sandstones, shales, clays, coals—one great peculiarity of this period—and ironstones of the carboniferous system, indicate a vast variety in the causes concerned in their production. Lakes, estuaries, and shallow seas were the places of deposit; gigantic rivers, periodical inundations, tidal currents, and waves were the transporting agents; extensions, deltas, and wide river plains nourished vegetation; a vast extent of recently upheaved continents was the source of the rock *débris;* and to people the scene new races of organized existence—plants and animals—were called into being. The most characteristic organic development of this period, however, consists in the enormous growth of terrestrial vegetation, from which those numerous beds of coal, from which the system takes its name, were derived. This vegetation seems to be of a tropical character principally—palms, pines, tree-ferns, reeds. They were generally of gigantic size, and they indicate rapid growth. Every swamp, plain, and hill-side seems to have been choked with their luxuriance, evincing more

favorable conditions for the growth of vegetation than the earth has experienced at any time since.*

During the carboniferous period the subterraneous fires were less active than at former periods, but it was only an era of ordinary tranquillity. They were only smouldering to renew their activity after a time, which marked the beginning of a new formation, known as the new red sandstone system. Before the commencement, and after the close of the coal-forming period, subterraneous forces were very active, upheaving the hills upon which the mountain limestone of the new red sandstone period reclines, the conical and isolated elevations of the coal measures, and producing all their fractures and dykes. The strata of this system are composed of arenaceous, argillaceous, coleareous, mogenesian, and saline material.

After the new red sandstone formations, there followed a period of comparative tranquillity, known as the oolitic system. The surface of the globe during this period consisted of islands and low continents, surrounded by comparatively shallow seas. The land supported a tropical, but not luxuriant vegetation, and the waters swarmed with shell-fish, fishes, and reptiles. The cretaceous system followed. This occupies only limited spaces, and, being of marine origin, it points more to detached and inland seas as the areas of their deposit than to the shores and bays of the ocean.

The tertiary strata succeeded. These were deposited under conditions still more closely allied to those of the present day. With a few exceptions, the gravels, sands, marls, and clays are scarcely distinguishable from those of recent times. These tertiary accumulations were regarded, before the labors of the celebrated Cuvier and M. Brogniart in the Paris basin, as mere superficial accumulations. They seem to have been formed in estuaries and shallow seas, under such circumstances that fresh water was the predominating agent.

* Page's *Geology*, pp 143–4; Higgins' *Physical Condition of the Earth*, p. 29; Ansted's *Ancient World*, chap. v.

The present era is that represented lithologically by those superficial accumulations of sand, gravel, clay, marl, peat-moss, shell-beds, and coral-reefs, with which all are more or less familiar.

We have thus very briefly sketched the physical history of the earth. It presents a long series of mineral and vital gradations, comprehending an immense period of time, and, as yet, only imperfectly interpreted by the science of geology. Of the future history of the physical character of the globe, it is vain to conjecture. We know too little about the laws regulating terrestrial phenomena to be able to predict what will take place in the geology and physical geography of our planet. Geology is not yet, like astronomy, a science of calculation.

Of the physical geography of those parts of the earth where the different formations which we have enumerated reach the surface, we may remark that a granite district is not distinguished for its fine scenery. If the rock be soft the hills have a rounded appearance, and are only peaked and irregular in outline when it is hard and flanked by stratified rocks. Granite rocks in general form lofty mountains and elevated table lands, and such districts present a bleak and barren aspect, which is rendered still more so when the more elevated peaks are snow-clad.

The physical appearance of primitive* districts is bold, rugged, and unfertile. The granite rising up, throws the primary strata—gneiss and mica schist systems—into lofty mountains, and into abrupt vertical positions, and it is here chiefly in this formation we find those deep glens and abrupt precipices which give the well-known picturesque effect to highland scenery.

Transition or palæozoic districts are marked by geographical features at once bold and mountainous. "Supported by granite," says Professor Phillips, "and mixed with igneous

* The stratified rocks are usually divided into primary, transition, secondary, tertiary, and superficial accumulations in the older geological works; and in some others into primary, palæozoic, secondary, tertiary, drift, and alluvium. The latter division is used by the best English and American writers, and it has more or less foundation in nature.

masses, the slaty rocks of the English lakes rise to more than three thousand feet in height, and present a variety of outline and intricacy of combination which, in connection with clear lakes and considerable waterfalls, leave to Switzerland little superiority."

The old red sandstone districts are usually varied and irregular; the hills being less bold and precipitous than those of the primary formation, but more so than those of the subsequent periods. Where the shale lies flat and unbroken, the scenery is uninteresting, but the soil is usually fertile. On the contrary, the mountain scenery of the old red sandstone formation is much varied—"rising in easy undulations, sinking and swelling in every direction, yet preserving a common continuity of range, they present in the chain a succession of rounded heights and cones; but, in the mass, an irregular surface of hills and valleys, glens and recesses, of great beauty and amenity."

Carboniferous districts are rather tame and uninteresting in their physical appearance. The hills connected with the mountain limestone present considerable variety, however, owing to the bold escarpments of that rock. New red sandstone districts are flat and gentle. There are no picturesque crags, mountain ranges, or deep ravines to diversify the scenery. The oolitic system is not sufficiently developed in many parts of the earth to give any distinctive geographical features. The physical aspect of the chalk formation is distinguished by the smooth, flowing outlines of the hills and valleys. There are no rugged and lofty peaks, as in the earlier formations.

The scenery of tertiary districts is rather unvaried, as in the plains of this formation in northern and middle Europe. In England, the strata partake of the undulations of the underlying chalk. From the open and porus nature of the sands and gravels, tertiary soils are usually light and dry, capable of profitable cultivation, though not naturally fertile.

A number of rocks, having a resemblance to one another in

mineralogical characters, have been classed together under the general name trap, signifying a stair, from the stair-like appearance which they present. Mr. Parker found one part of Lewis river, beyond the Rocky mountains, walled up with trap-rock to the height of three hundred feet, nearly perpendicular.*

The Giant's Causeway, on the northern coast of Antrim, in Ireland; and Fingal's Cave, in the Island of Staffa, one of the Hebrides, are celebrated examples of the columnar structure of this class of rocks. The former commences in one direction at the basis of a cliff rising six hundred feet above the level of the Atlantic. "The causeway consists of an immense number of columns, which project into the sea to a considerable distance below low-water mark. Its length at low water has been computed at about six hundred feet, and its greatest width at about two hundred and forty feet; the height of the columns vary. The majority are not more than twenty feet high, while others have been found to measure six and thirty."† The entrance to Fingal's Cave is fifty feet broad and a hundred feet high. Its entire length is two hundred and fifty feet. On each side there is a series of beautifully-formed and regular columns, and the broken pillars of the roof resemble the enrichments of gothic architecture. "But if this cave," says Dr. Macculloch, "were even destitute of that order, symmetry, and richness, arising from the multiplicity of parts, combined with greatness of dimensions and simplicity of style which it possesses, still the prolonged length; the twilight gloom, half concealing the playful and varying effects of reflected lights; the echo of the measured surge as it rises; the transparent green of the water; and the profound and fairy solitude of the whole scene could not fail strongly to impress a mind gifted with any sense of beauty in art or in nature."

Respecting the age of the world, our knowledge is very imperfect. Our data here are too few and too imperfect to en-

* *Exploring Tour beyond the Rocky Mountains*, p. 127.

† Higgins' *Physical Condition of the Earth*, p. 244.

able us to arrive at any very satisfactory conclusions. Lyell estimated that Niagara river had occupied thirty-five thousand years in receding from Queenstown to its present site.*

Since the earth is nearer the sun by nearly three millions of miles in winter than in summer; and since this difference is constantly varying, necessarily producing a change in regard to the difference of summer and winter temperature; and since, according to the calculations of M. Leverrier,† the earth approached the sun, two hundred thousand years ago, ten millions of miles nearer in winter than in summer, the question arises, was any of these great alterations of terrestrial temperature between summer and winter (112° Fah.), dependent on the earth's eccentricity, the cause, or among the concurrent causes, of those producing the glacial period? Sir Charles Lyell, in attempting to answer this question, arrives at the conclusion that the great glacial period began about a million of years ago. And, extending the argument further, he concludes that, speaking after the roughest approximation, "*two hundred and forty millions of years may be the entire series of years which has elapsed since the beginning of the cambrian period.*"‡

The connection between astronomical and geological phenomena is rendered still further apparent by the researches of the late Professor Alexis Perry, of Dijon, France.‖ He finds, by an extensive comparison of the times of earthquake shocks with the positions of the moon, both with respect to the sun and in her orbit, "that there is a relation between the frequency of earthquakes and the rotation of the moon." He finds also, "That, relatively to the lunar motion, earthquakes are more frequent at the perigee than at the apogee; and relatively, to the earth's orbital motion, they are more frequent

* *Travels in North America*, vol. i, p. 27.

† *Annales de l'Observatoire*, vol. ii, edition iii, p. 29.

‡ *Prin. Geology*, 10th ed., vol. i, p 296. See also *Monthly Notices of the R. A. Society*, vol. xxviii, p. 120.

‖ *Propositions sur les Tremblements de terre et les Volcans*; formulées par M. Alexis Perry, Professor à la Faculté des Sciences de Dijon. 36 pp. 8vo., Paris, 1863.

at the winter solstice than at the summer; that is, the perihelion, than at the aphelion." It has also been suggested that the gradual rise of continents or of coasts may be owing to some secular action of the moon. Professor Simon Newcomb, in discussing the apparent inequalities of long periods in the mean motion of the moon, infers that, very probably, the interior fluid* of the earth is in some way subject to a secular movement, possibly sometimes towards the equator, and then from it, and this influences the rotation of the crust of the earth, and this variation can, at present, only be detected in the motion of the moon.† Would not this secular fluid movement produce a similar secular change in the relative heights of continents?

Geology is not a speculative and useless science. To the miner it is of the first importance—being essential at every step. To the engineer it is no less useful. In fixing a line of road or railway, the informed engineer will avail himself not only of facilities for present construction, but calculate for the future benefit of those concerned in the undertaking. The agriculturist may derive much assistance from the science of geology. He should know the composition of the prevalent rocks, and the positions which they occupy, that he may select the proper kind for his purpose.

This science, like most other sciences, has still a wide field before it for research, many difficulties to overcome and prejudices to remove. But it is intimately connected with the useful and the practical, and we may hope to attain yet to a very perfect knowledge of the physical history of our planet.

ART. VI.—1. *The Treaty of Paris, the Treaty of Prague, etc.*

2. *Diplomatic Correspondence and Declarations of War.*

UNDER the old system of the German Federation, Germany was the bulwark of peace to all Europe. She num-

* It is estimated that the crust of the earth is only about a hundred miles thick. Observation shows that there is an increase of 1° Fah. for every fifty feet of descent towards the centre of the earth. At this rate the temperature of melted rocks would be reached much short of one hundred miles.

† Silliman's *Journal*, vol. iv, p. 194.

bered seventy million people, had two millions of fighters ready to defend her interests, and Austria, Prussia, Bavaria, and Saxony were so little disposed to unite for purposes of aggression, that but one instance is recorded of their so doing—that of Schleswig-Holstein. Abominable as that exploit was stigmatized throughout Christendom, it was, nevertheless, the exception; flagrant, indeed, but proving the rule; generally the German Federation bade the world defiance, yet warred upon no one. It was the hereditary rivalry between Austria and Prussia which caused disruption and open quarrel between these two. Prussia conquered, and with Count Bismark as her prime minister, she commenced that dynastic career the issue of which is still doubtful, notwithstanding the reverses of the French.

A glance at the map shows France to be coterminous with Germany for a distance of about two hundred and sixty miles; the frontier forming an angle, of which the southern side commences at Basel, in Switzerland, and runs to Lauterburg, as the apex of the angle; and the northern and shorter side terminates in the small village of Sirk, on the Moselle. Baden, Bavaria, and Rhenish Prussia adjoin the French line.

Seated almost impregnable in the north, amid the devotion and national aspirations of forty millions of German population, so suddenly, and in some cases so rudely, augmented from scarcely more than half that number, Prussia was attaining to dominion in the East through one Hohenzollern on the throne of Roumania, and if, in the West, through the crowning of another, she would by her alliance with Italy be enabled to encircle France with a *cordon* of subsidiary states, and the new power which Bismark had created, would assume a preponderance in Europe unmatched since the time of the first French empire. Russia, indifferent, had her own designs in the East to prosecute; besides her, no state upon the Continent was strong enough to manifest envy or dislike at the swift absorption of so much of Germany by its Prussian element except France, and to this power the Spanish sceptre-

in the hand of a Prussian prince, closely related to the reigning house of Portugal, were suggestive of a Prussian coalition in the French rear, and indicative of Prussian plan and startling purpose.

Bounded on three sides by Prussian influences—from Jahde to Basle, and from Nice to Geneva—as in such a case France would be, when we take into account the traditional jealousy of the two nations, and the working of recent events in Prussian policy, we shall marvel less, it may be, at French antagonism to the Hohenzollern scheme, even had the imperial cabinet been unsustained in its objection by established European precedent.

A retrospective glance at the reign of King William will show that there was little so decidedly preposterous, as has been diligently set forth, in the suspicions of French statesmen as to the undeclared tactics of Bismark. Crowned in 1861, in 1862 commenced the troubles between the monarch by right divine and his then discontented people; troubles which, in one way or another, have continued to the present day—witness the imprisonment of Jacoby and friends within the last few months. In 1863, the terms of the constitution were set at naught to reorganize the army at the king's pleasure, and dissentient deputies were sent to their homes to learn better than to dispute the sovereign will. In 1864 he made war, though his chamber had refused to vote the budget for that purpose which the government had demanded; and in 1865 deputies again were prosecuted, who in their speeches condemned the course of royalty. In 1866, a recalcitrant house was deliberately prorogued by Bismark, and the king declared war and peace, and afterward dragooned his parliament to acquiesce.

These are but characteristic items, notorious in the domestic history of King William's sway; and the foreign policy of the king and his minister is not yet a forgotten story from 1864, when the Schleswig-Holstein question, as now known in the records of European diplomacy, was

unexpectedly raised. This was a pretended protection of the German independence of the duchies, from alleged infringement on the part of Denmark, under whose rule they were; and it ended with the brutal wresting of her possessions from the maternal state. Germany was put in the van, and Austria dragged in the rear, to crush puny Denmark and rob her of her provinces.

In 1865, Lauenburg was bought from Austria without consulting its inhabitants, who, at the point of the bayonet, were ordered to transfer their allegiance to the Prussian king. In the same year, ignoring that the plea for war upon Denmark had been the interests of Fatherland, Bismark signed the treaty of Gastein, by which he gave Holstein to Austria, keeping Schleswig for himself, and cast the protest of the Holstein states into his waste-paper basket; but, in 1866, despite the treaty signed the year before, he laid covetous hands on Holstein, Austria's allotted share in the unholy conquest. The diet of Frankfort, which remonstrated, he sent about their business; and even when Austria joined her angry reclamations, he continued a deaf ear, as he busily consummated his armaments at home; and having denounced the kaiser to Europe, as planning a disturbance of the public peace, he one day opened the campaign of '66, and two weeks later triumphed at Sadowa.

Prussia, in short, during the government of the present king, has absorbed Hanover, Hesse-Cassel, Nassau, the free city of Frankfort, and a number of minor principalities. She has mediatized Saxony, now practically a Prussian province, and has made mere subject satellites of Bavaria, Wurtemburg, and Baden. She has expelled Austria from the German bund, though Francis Joseph had committed no other fault than that of remaining faithful to the original confederation. She has despoiled Denmark, and after assenting to a niggardly restitution to that kingdom, deliberately refused to act. She has intimated that Germany could not be content without Holland, and cajoled

the imperial cabinet with the idea of compensation on the Rhine for the emperor's neutrality, whilst she took what pleased her from her neighbors.

When all was done and over she objected to the sale and cession to the French of Luxembourg by the Dutch, a bargain which, with English counsel, the French renounced. Kings and princes by the score she has deprived, as in Hanover, of their states and fortunes; and, finally, Bismark has ostentatiously denied to France the right of watching over the treaty of Prague, by the fifth article of which, at French instigation, Prussia agreed to restore a portion of Schleswig to Denmark, the rightful owner of the whole; the treaty, as all are aware, has remained a dead letter. And such, in brief, is the unvarnished but eventful chapter of Prussia's acts and growth in the nine first years of the current *régime*.

General Prim, with the approbation of his colleagues in the government of Spain, more than a year ago, had privately sounded the disposition of Prince Leopold,* who at first declined the crown of Isabella. Subsequently, through the intermediary of his sister, the countess of Flanders, it was said, he responded favorably to the overtures of the Spanish general, and the programme for his installation was speedily gotten ready at Madrid. General Prim addressed a letter to the president of the Cortes, asking him to convene an early session; the prince was to be elected the first days of August by two hundred votes, which are more than the needful two-thirds of the Spanish assembly: he was to be conveyed from a German port in a Spanish war-steamer, and his civil list was fixed at one

* For the sake of completeness, we will state that Prince Leopold of Hohenzollern-Simarengen is son of the actual prince of that name, who abdicated his sovereign rights in favor of the King of Prussia some twenty years ago, and received the title of Royal Highness and a recognized rank at court as a member of the Prussian royal family, with which his lineage connects him. The son married, in 1864, a sister of the King of Portugal, and is elder brother to Prince Charles of Roumania, who conquered that country in 1865, carpet-bag in hand, and who now reigns there in discontented fealty to the Turkish sultan. Prince Leopold is a catholic, 35 years of age, a colonel in the Prussian army, a grandson of Murat on the female side, and so a distant relative of Napoleon III.

million dollars. These and other settlements were published in London and Paris within a day or two of the divulgation of the Hohenzollern candidature, that is to say, in the second week of July; and the abrupt intelligence was commented on with surprise at its completeness, and an universal sense of its distastefulness, with or without design, to the government of the emperor.

Sadowa, North Schleswig, Luxembourg, and the Baden fortresses represented great events during the past four years, which had not been constantly turned by Prussia to conciliate the pride or friendliness of the French; yet they were deemed slight provocations by the side of that which would place a probable servant of Count Bismark upon the throne of Spain, whence a Bonaparte had been chased with ignominy. And even at this early hour, more than one German journal* discountenanced Bismark's plan as such, surmising, as did certain of the British press, that the Spanish Warwick must have obtained the consent of Prussia before offering the crown to a cadet of the house of Hohenzollern, since in the presence of inevitable opposition from France, and without that sanction, General Prim would have been sedulously preparing a gratuitous mortification for his countrymen.

In the midst of speculation at the momentous news, whilst awaiting some manifestation from the cabinet of Berlin to dissipate or settle the reigning doubt as to Bismark's sponsorship of the *protégé* of General Prim, the theory that that minister might have long been ready and willing to fight France, but had bided the proper opportunity according to his judgment, was naturally enough advanced. Had Bismark, though able, it was argued, essayed to precipitate the juncture with his new confederation of the South German states in the face of French remonstrances, Prussia would have appeared as a notorious breaker of treaties and a wanton disturber of the continental

* The *Frankfort Gaze te*, the *Mannheimer Obenziting*, with the *Volksbote* of Munich, this last the most influential of Bavarian newspapers, all pronounced the step to be one in the interest of the Hohenzollern dynasty, to which the future of Germany was subordinated.

peace. France, as the ally of Bavaria, Wurtemberg, and Baden, would have come forward to resist her amid the applause of all Europe. The sympathies of Austria would evidently have been secured to France, whatever real service the former might have been able to render. France, in reality, then, by treaty and by act, was a material as well as moral check to any violent programme of spoliation and annexation, like that in Schleswig-Holstein, Hanover, or the duchy of Hesse,* on the part of the Prussian premier towards South Germany. France, perhaps might prove a block in Bismark's path, whilst she had seriously bound herself in no wise to hinder any expressed popular will or action of the southern states.

If now this Spanish crisis had been fostered to give umbrage to the emperor, it was submitted that Prussia could enter the struggle with several points in her favor, and accused of quite an intangible provocation, if of any at all, to justify Napoleon III. in declaring war. Bismark's ministry, in announcing their astonishment at French temper, might plausibly urge that they had nothing to do with General Prim and Prince Leopold: that the one represented Spain, a country to which the Germans were indifferent, and that the other was of age and a free agent, with whose ambition the king of Prussia must not be confounded, and the government could then reluctantly and solemnly take up arms to repel an advancing foe, not to Prussia alone, but to all Germany.

The Prussian sovereign, as is well known, at last denied all connection with the Spanish matter, and announced that he could not prevent Leopold from accepting a crown if he so elected, and alone at Ems the bothered monarch equivocated somewhat and finally got virtuously angry; while the father of the prince withdrew the son's candidature without any trace of Bismark's finger in the pie. The official journals of Berlin, in the meantime, as if at a given key, unremittingly proclaimed, but with remarkable composure, that war with France could

* No consultation of popular will was made in the annexation of Hanover, the electorate of Hesse, the duchy of Nassau, or the free city of Frankfort.

only spring from the notorious jealousy and foregone resolve of that dictatorial country,* and if Prussia was not more and more exonerated by the reading public, France unquestionably was more severely censured than before.

One fact, however, through all this diplomatic righteousness, became more significant to the stolid few as time passed on, and that was that Prussia, having bound the South German states, by special treaties, to co-operation should the fatherland be invaded, would, by a crushing defeat of encroaching France, impel them irresistibly towards the projected unity. Instead of wearily gaining possession of the south by force or trick, Prussia, in the event of victory, would have only to accept the spontaneous homage thrown at her feet, and would thus make good her claim to the leadership of the German race. What the crippling of Austria had begun for Prussian aggrandizement, it was eventually hinted, the paralyzing of France would accomplish, and the latter, all armed and defiant as she stood in the way, might, after all, prove vulnerable. At any rate, even a migratory effort to overthrow Bismark's only obstacle to European supremacy for his country would afford an occasion to display a prowess of Prussia in the eyes of the confederation, sufficient to awe and to reconcile definitively certain restless provinces in northern Germany and to render the Main but a provincial line. Although any part or all of this might legitimately come about, it was obviously necessary that Prussia's purpose should don the guise of a German grievance seeking its just redress, and that France should be looked upon as the common enemy.

If we assume, then, that Bismark had arranged the election of Prince Leopold in Spain with a covert but ultimate view to a war with France, what line of conduct could he have adopted than the one he did, when the French government im-

* Up to and during her war with Austria in 1866, Prussia apparently had confidence enough in France, as not a Prussian helmet remained upon the Rhine when that war began. Yet Bismark had offered no bribe to keep quiet "rapacious France."

petuously pointed out the sinister tendency of that election? He disclaimed all complicity, challenged any palpable, convicting proof, and at the same time renounced either the right or the inclination to divert the Spanish crown from the prince in question; and this wondrous inactivity enhanced his reputation as a master in his craft, led certain politicians by the nose awhile, and cast all the blame for precipitating war upon the French, without diminishing the certainty that war would be inaugurated. Putting forward his self-anointed king, the minister stopped in the background to give full view and play to French absurdity and distrust, and the arrogance and agression of the empire.

At Paris it was at once made clear that France on no account would abide the intrusion of a Prussian prince into the Iberian peninsula. It should here be remarked that the circumstances of Napoleon III. at that time no longer seemed to push him in the direction of war. As M. Ollivier said from his place in the chamber, the emperor had won his Sadowa on the 8th of May previous, when he received the support of upward of seven millions out of a little more than nine millions of French voters. Much progress had been made during the two last years, and the French were becoming reconciled to the rapid creation of the North German state and the military strength of the Prussian king. Their own professions, their newly-introduced popular institutions, and the moral sense of the French democracy led them to sympathize with the desire of the Germans for unity, however they construed the acts of the Prussian premier. The war theories of M. Thiers and the men of 1840 were long since repudiated both by leaders and people—even the recollection of enormous exactions attempted by Prussia in 1814-15 were subordinated to the souvenir of Waterloo; and the animus toward England, so much expatiated upon, had brought forth commercial treaties and an allied bond. But for this ill-timed affair of Hohenzollern, and the oft invoked "traditional jealousy" between France and Prussia, as far as the former was concerned,

at all events might shortly have died a natural death. The reader has not to be shown that France had no sinister end to serve in dealing with the peninsula.* The attitude of the emperor towards Spain since the overthrow of Isabella had been unexceptionable.

If there was nothing hostile in this Spanish negotiation for a Hohenzollern king, why was it—therein differing from the overtures made to other personages by the Prim regency—kept so secret until all matured? clamored the Parisian press. For many of them, not supporters of the empire, the transaction had the air of a vulgar *coup d'état*, whilst the election of an occupant to such a throne as that of Spain should have been, according to their ideas and European usage, a solemn and dignified proceeding, open to the world from its inception, and frankly conducted to its end between friendly sovereignties. It was not in French nature, we fear—if elsewhere certain to have been found—this feeling of non-resentment at being ignored, if not cozened, where they considered themselves so vitally concerned. "We do not admit," said the Duc de Grammont, French minister of foreign affairs, "that respect for the rights of a neighboring people obliges us to suffer a foreign power, by placing a prince upon the throne of Charles V., to disturb the European equilibrium to our detriment, and to imperil the interests and honor of France." Assuredly he could point back with more or less force to 1831, when Belgium was constituted, and when the five powers—Great Britain, France, Russia, Austria, and Prussia—selected Prince

* The popular idea of a perpetual spirit of conquest animating the second empire ever since its erection, is founded, we suspect, upon the periodical cry of the *Times*, and an apprehension of the English people as to French jealousy of British possessions in India, or a contemplated descent upon the English coast itself. Not only have no inimical projects toward Great Britain been put into execution, but the real conquests of Napoleon III. have been limited to a port or two in Cochin-China, a little more desert ground in Algeria, and the annexation of Nice and Savoy after a popular vote in the provinces, and subsequent to the Italian war. He may have cast longing eyes upon parts of Mexico, and would have been glad to purchase Luxembourg from the Dutch, had Bismark consented; but opportunities in the East, in Italy, and Spain were apparently neglected by the emperor, to say nothing of his perfect oversight as to his chances for the left bank of the Rhine during the Prusso-Austrian war.

Leopold and made him king of Belgium ; no one of them alone presumed to do it ; nor was the choice first submitted to the Belgian people. In 1832, when Greece was left without a government, Otho, son of the king of Bavaria, was named by Great Britain, France, and Russia, and presented to the Greek nation as their ruler; and later, in 1862, upon the flight of Otho, the voice of the Greek people was influenced by no single foreign cabinet in favor of George of Denmark, but by all the protecting powers, as in 1832.

In his circular of last July 21st, the French foreign minister affirmed that the idea of raising a Hohenzollern to the Spanish throne was not a new one. In March, 1869, the French ambassador at Berlin informed Count Bismark of the antagonistic view the French government would take of a like proceeding, and Bismark disavowed any such design. To be sure, a circular of the Berlin cabinet endeavored to meet this statement, as to the date of the agitation touching the candidature, by a quibble; but Europe eventually recognised no unequivocal denial of the French assertion to have been uttered by Bismark. In the same circular of the 21st July, M. De Grammont thus resumes his appreciation of the incident: "An understanding prepared clandestinely by unavowed intermediaries was, if light had not unexpectedly been thrown upon it, to bring things to a point when the candidature of a Prussian prince to the throne of Spain would have been suddenly revealed to the assembled Cortes. A vote carried by surprise, before the Spanish people should have had time for reflection, would have proclaimed (at least such was the hope) Prince Leopold heir to the sceptre of Charles V. Thus Europe would have found itself in the presence of an accomplished fact; and, speculating upon our deference for the great principle of popular sovereignty, the calculation was that France, in spite of a passing displeasure, would pause before the will of a nation thus ostensibly expressed."

The Duc de Grammont may have wrongly imputed like views and endeavors to Count Bismark; but he put his own

appreciation, such as it was, tersely enough. Nor was his appreciation utterly unsupported by rational conjecture and strange appearances. Europe, including the Spanish people, had indisputably been taken by surprise. General Prim remained inscrutable, notwithstanding the charges of the Paris cabinet and press. The king of Prussia at first denied all knowledge and responsibility touching his kinsman's candidature; he afterward admitted that he was privy to it, and had authorized it, but declined to order its withdrawal because he had not commanded its acceptance; and he subsequently informed the French ambassador of its vicarious retirement, but as of a matter not his own. Mysteriously deserted for several days by his chief counsellor, he seemed left alone to make a muddle of a diplomatic emergency of nicety and importance; for he cut short negotiations by refusing, with ill humor, any pledge that Leopold's retirement should be final, or to forbid his acquiescence if renewed.

In this refusal the French government saw but the old attempt at fretting them, by indirect menace, to commit themselves to war. In the refusal was the *gravamen* of the entire circumstance, and with it were recalled, and in a more unwelcome light, the neglect of the treaty of Prague; the continued occupation of Mayence by Prussian troops; and the delayed retribution, fractional though it was, to plundered Denmark. The course pursued by France cannot be denominated extraordinary, when, upon having her suspicion a second time aroused—and that notwithstanding anterior and explicit assurances from Berlin—she ultmately insisted upon some guarantee from the king as to non-meddling with the Spanish throne. For the emperor the subject was one of prime gravity, as, in the event of war, France might find herself obliged to detach an army of two hundred thousand men to guard her Spanish rear. The cabinet of the Tuilleries did not, therefore, deem itself unduly exacting; nor was its demand for sureties strange in the history of European complications. So war was proclaimed. The Duc de Grammont

dared not temporize, even had he been disposed. The constitutional ministers of France, the national representatives, the press, and the people were behind him. Had he yielded an inch he would have been ignominiously driven from office. Party differences disappeared, and all Frenchmen rallied about the government, spurred by one spontaneous impulse and conviction as to the designs of Prussia. If the ultimatum of the French cabinet did not displease Count Bismark, the promptitude with which it reached the French capital must have taken him somewhat aback, though his amazement may have been but readier satisfaction.

Sir Roger De Coverly might pronounce the Franco-Prussian question a puzzling case, and find much to say for and against either party as to the responsibility of initiating the war. Viewed in one way, we may conceive, perhaps, the bluff refusal of Prussia to bind herself to abstain therefrom as indicating persistent manœuvring in regard to the throne of Spain, which the French had repeatedly signified they would not brook; in another light, the refusal was but a childish regard of Prussia for the dignity of her king. The French, with their own experience in dealings with the Prussian minister since the day of Sadowa, affixed, as we have seen, the former interpretation. If they were not warranted in their peremptory demand for guarantees, we may ask if Prussia was overforbearing in withholding them, when, by a simple compliance, she could have prevented war? Count Bismark and his record on one hand, and on the other a Bonaparte with his career; the one in haste with his vaulting patriotism, the other exercised at the rapid rise of a haughty and bellicose neighbor, and impelled to maintain his own prestige.

It would not be marvellous had Bismark reckoned upon domestic disturbance in France, once war broke out, to aid his martial operations. Of the internal condition of the country, as well as the precise military situation, he was probably as well aware as the emperor himself. Subsequent events have pointed, with more or less distinctness, to the existence of an

extensive *espionage*—not French in character, but spread through Paris and perhaps the departments, and which may have been flourishing for years. With a population of sixty thousand Germans in the capital itself; with German officers in the army, and German soldiers in the ranks; with German, often Prussian, writers upon the staff of almost every paper printed at the seat of government; with German clerks in the government offices, in the Bank of France, and French commercial houses; and with German courtiers at the Tuileries, it was no impossible task for a not over-scrupulous minister to institute and support a secret service of incalculable use to a foreign cabinet foreseeing possible rupture and occupation of French domain.

Almost immediately upon the declaration of hostilities, large quantities of gold dispatched to Prussian bankers by German firms in Paris were seized at the frontier. A lady-of-honor to the empress had maintained a political correspondence with the Prussian crown prince; part of that of the Countess Tascher De La Pagerie was accidentally brought to light and the lady imprisoned. Year after year, it was now reported by the press, artillery officers, engineers, and drill-sergeants had quitted the different corps of France to return to their homes beyond the Rhine, while numbers of Germans, in the guise of peasants, would seek field work in Alsace and Lorraine during the harvest season; and *sous-officiers* made prisoners since the war began were recognized by farmers who hired them as common hands a year or so before. Books published in 1869,* and earlier, were found upon the German dead, containing colored plates of all the uniforms of the imperial legions, maps of the country, plans of towns, designations of estates, with words and phrases in common use, evidently compiled for the rank and file; and the topographical knowledge of certain French departments in the East, possessed by Prussian officers, it has been frequently narrated, was more explicit and accurate than that of General McMahon's

* "The German Soldier in France." Julius Klonne, Berlin, 1869

command. All of this does not compliment French honesty, wit, or prudence so much as it strengthens the notion of an elaborate and long-studied project with the guiding minds and captains of Prussia.

Everybody at the outset conceived the armaments of Prussia to be incomplete, and predicted misfortune for her arms at first, maugre the solemn appeal to heaven of the king of Prussia that his cause alone was just. Yet how many days elapsed before she had from six to seven hundred thousand men in the field,* a large army on the frontier, and three to the Frenchman's one at Woerth? though it may be untrue, what we have seen in print, that the letters for calling out the landwehr were written and addressed in the autumn of 1869. Doubtless the French supposed their barracks well filled, and their army well prepared. What the minister of war, the unhappy Marshal Le Bœuf, replied to Count De Keratry, he incontestibly believed: "You say we are ready, Marshal; but what do you mean by ready?" "If the war lasts a year, there will not be a gaiter button to provide!" was the memorable response. And yet when Marshal MacMahon reached Strasbourg with his seventy thousand men, there he was stopped a fortnight for the lack of a provision train, as he had not two days' rations for his force with which to enter German territory.

* From a careful computation which appeared in the London *Standard* newspaper, the most detailed and complete of its kind that we have seen, we gather that France possessed, previous to the war, a regular efficient force of 400,000 men, with 100,000 well-trained reserves, and 160,000 indifferently-trained reserves. Prussia had a regular efficient force of 200,000 men, but upward of 600,000 well-trained reserves. The National Guard of France, over and above her forces just stated, numbered 550,000 men. Prussia had her landsturm corresponding thereto, but better drilled, having seen active service, and probably more in real aggregate. Besides the above, Prussia could count upon 100,000 regular efficient troops from South Germany, and 100,000 well-trained reserves. Prussia could put into the field, exclusive of her militia, and inclusive of the armies of South Germany, about 1,000,000 men against the 660,000 of France, likewise exclusive of militia. By the late Marshal Niel's new military system, inaugurated February, 1868, France in 1877 would have been able to dispose of between eight and nine hundred thousand men of regular and efficient force. That is, *only* in 1877 would France have been approximately on a military equality with Prussia. Compared with Prussia, military France was, with Niel's new order of things, like a lobster changing its shell when war began. These facts and figures were well known in each army. "We can conquer her, and shall conquer her to a certainty," said the Prussian Crown Prince eighteen months ago.

That the second empire, at its close, was a hideous failure, cannot be denied. To one acquainted with that science of system and detail peculiar to French governmental and military machinery, so exquisitely checked and counter-checked, such domestic corruption and foreign defeat of France appear an enigmatical wonder. That a set of knaves surrounded the ill-starred emperor is evidently the fact. Imbeciles there were in plenty, too, occupying the highest places. Shoddy contractors had thriven and favorites had been bought, and cheating and robbing had been the order of the day almost beyond conception. On paper alone, the army stood so numerous and perfect, though the exchequer had paid again and again for food and raiment of pretended soldiers, whose only military being was a name in the regimental roster. Kegs of powder, piles of bombs and shot, and cases of cartridges had been ostensibly examined and stowed away in their proper arsenals by sworn inspectors; but the powder turned out colored dust; the bombs were damaged shells; the shot were made of clay, and the cartridges with sand. Bones and shavings, hair and common dirt, were in barrels marked beef, and in cans marked vegetables, preserves, or soups; and with revelation upon revelation of this frightful state of things came the great collapse.

So surely as the whole question as to the responsibility of the war hinges not alone on the choice of a Prussian king by the Spaniards, nor altogether on Bismark's share in the negotiation of General Prim, but rather upon the integrity of the individual, and the true temper and aims of King William's prime minister, as sure is it that though every man in Europe and America might be intimately convinced that Bismark abetted the Spanish plan, still the official declaration of the Berlin cabinet, that it had never mingled in the matter, must be accepted as conclusive in Prussia's favor, until disproved by other testimony. Such was the dictum of the London Times, a partisan of Prussia throughout;* and we agree

* Early in the discussion the Times was called, by its contemporaries, the Prussian organ. The spurious secret treaty printed by this journal on the

thereto, but strictly in the diplomatic sense. Diplomacy may, nay should, avow that, with the circular of its ministers, Prussia cannot be charged with having wantonly instigated the war. The king of Prussia, in the midst of this awful combat, calls the French emperor, whose relations and people he is slaughtering day by day, "my beloved brother," according to diplomatic rule. The imperial chief proclaimed to the Germans that the fight was not to oppose the Teutonic race, but to curb a domineering Prussian king, yet mowed down the sons of Fatherland with his *mitralleuses*; just as diplomatically any crowned head reiterates his promise to keep the peace, while he is actively arming and drilling, if not concocting war. History must scout such specious nonsense, however, go behind such double meaning phrases, and study the elementary influences, the developments, and events.

A dynastic duel had become inevitable; it had been nurtured and reckoned upon like any crisis on settling day. As a duel the war began. There was no war, no wish for war from man to man between the peoples, until diplomatists hocussed, and demagogues misled or scared the masses, or the shock of battle bred hatred and submerged the original wrong or truth. If in chronicling this gigantic feud history should refuse to register as the real one the official policy of King William, whose bulletins set forth that he assailed the Bonapartes not France, and who yet, at Napoleon's fall, pressed on to Paris, and battled with the young republic which cried for peace; with that refusal the knot in the skein we would unravel becomes untied.

25th July, with great flourish, was but one, although a telling instance of the animus of that paper toward France. This treaty, purporting to have been mysteriously communicated to the Times, pretended that France had agreed to wink at the annexation of Prussia since Sadowa, and at any coercion toward the South German states, provided the emperor could seize Belgium unmolested. The exposure of the manœuvring connected with this draught of a treaty which, it was ultimately stated and believed, was suggested by Count Bismark to the French ambassador at Berlin, M. Benedetti (who made that statement), and four years ago! The latter adding that he simply reduced to writing the proposition of Count Bismark, who, under pretext of showing it to the king, craftily retained possession of the paper, which had lain forgotten until printed by the Times. The exposure, we say, was one of double dealing and low trickery, that between individuals and diplomatists would be called unworthy indeed.

Again, could history demonstrate that Napoleon was to gain thereby, and so rushed to the combat which upset his throne, to France belongs the blame. To commence the war that threatened German unity, was King William's slogan—a unity no one has ever shown that France attempted to prevent, when she could have done so in its infant days—then it was Alsace and Lorraine the king demanded, with Metz and Strasbourg as sureties for peaceful German unity. Once master of these two fortresses, Paris itself and the treasures of the capital seemed to animate the Prussian's greed in the name of German unity.

ART. VII.—1. *Protoplasm; or, Life, Matter, and Mind.* By Dr. LIONEL S. BEALE. London. 1870.

2. *The Cell Doctrine: Its History and Present State.* By JAMES TYSON, M.D. Philadelphia. 1870.

3. *Protoplasm; or, the Physical Basis of Life.* Lecture by Prof. HUXLEY. "Fortnightly Review," February, 1869.

4. *Microscopic Researches into the Accordance in the Structure and Growth of Animals and Plants.* By Dr. TH. SCHWANN. Translated by HENRY SMITH. London. 1847.

5. *Contributions to Phylogenesis.* By Dr. M. J. SCHLEIDEN. Translated by HENRY SMITH. London. 1847.

THE consideration of those minute units of organic nature called cells, from whose aggregations and transformations all animal and vegetable forms are believed to result, has of late years assumed a high degree of interest. This interest arises from the publication of several original and striking views upon the subject, which dissent materially from the formerly entertained hypotheses, and are at striking variance with each other in some important points.

The question: Is there a special life-force, or merely a complex chemical energy, at the basis of vitality? has long been of interest to the scientific world; and though a great accumulation of facts has gathered round it, we are yet far from a definite answer. The rapid increase in microscopic power of late years, and the important results achieved in chemical analysis and synthesis, have much increased our knowledge of the intimate nature of organic tissue, and are giving us a definite idea of the character of the intricate evolutions in organized matter. Our new information has narrowed the question down to this: Does the plastic substance of the organic cell act through the agency of physical law, or by virtue of a special principle of vitality beyond the control of chemical force? It may be that no absolute proof can ever be brought to bear upon this subject; for possibly the minute complexity of nature will always lie beyond the reach of analysis, and first principles must always be taken for granted. But first principles shift, in the minds of different thinkers, from the natural to the supernatural, and the controversy may remain open as long as man continues to look at the universe from these two opposite points of view. This problem involves the much debated question of the spontaneous development of organic life, which, after endless experiments *pro* and *con*, yet remains unsolved.

Before considering this controversy, it will be well to glance briefly at the history of the cell doctrine, and trace it through its various evolutions down to its present state. Though Aristotle and Galen, among the ancients, were aware of the fact that the organic body is made up of a limited variety of elementary parts, yet what they called "elements" were but what the modern world calls "tissues," and no knowledge of the real organic "element" was gained until after the invention of the compound microscope—which is credited to the Jansens, father and son, of Holland—about 1590. All our real acquaintance with the intimate structure of nature dates from this invention, which has given the eye

of science a power of vision reaching so far into the kingdom of the minute, that it seems as if only the infinitely small can ultimately escape its research.

During the seventeenth century, numerous observers applied the microscope to an examination of animal tissue, discovering the blood and pus corpuscles, the capillaries, and various other of the more minute constituents of the body. Robert Hooke observed, in 1667, the cellular structure of plants. This subject was further considered by Malpighi in 1670, in his "Anatome Plantarum." He showed that the cells or vesicles could be isolated, and believed each to possess an independent existence.

But the first intelligent attempt to reduce organic forms into an ultimate physical element was made by Haller, who wrote in 1757. In his hypothesis, the cellular tissues of animals and plants are composed of fibre and of organised concrete. The latter substance he considers to be a species of concreted glue filling the spaces between the fibres. Wolf, whose experiments were made about the same period, believed the organs to consist at first of a mass of clear, viscous, nutritive fluid, without organisation. In this semi-fluid mass are formed cavities, which, if they remain rounded or polygonal, become cells—if they elongate, produce the subsequent vessels; the process being identically the same in plants and animals. In the plant the cells at first communicate, but are afterward separated; in the animal they always remain in communication. "In each case they are mere cavities, and not independent entities; organization is not affected by them, but they are the visible results of the action of the organizing power inherent in the living mass." These views differ radically from those now entertained, both in regard to the non-independence of the cell, and in the belief that organs are formed from differentiation in a living mass of organic fluid.

The fibre theory of Haller, however, held the ground until the latter part of the eighteenth century, when a number of

observers recognised the importance of the globule as an ultimate element of organic tissue. These globules were discovered in the brain, in the muscular fibre, and finally were considered by Heusinger as the starting point of all tissues. Henle describes the views of Heusinger as follows: "As the result of an equal contest between contraction and expansion, there arises the globule, of which all organisms are originally composed. Where, in an organism, *globules* and a *formless mass* are present, the globules arrange themselves according to chemical laws and form *fibres*. By a stronger exercise of power, the *vesicle* originates from the often mere homogeneous globule. Where vesicles arrange themselves, there arise *canals* and *vessels*."[o]

The globule hypothesis was still further extended by Milne Edwards in 1821. He closely examined the fibrous tissues, and declared them to be composed of globules of about one-eight-thousandth of an inch in diameter, and that all organic textures were formed by an aggregation of these globules.

This idea of the important agency of a supposed homogeneous globule in organic tissues, yielded to a belief in their cellular composition. We have seen that the presence of vesicles or cells in the organs of animals and plants had long been believed; but their primary importance was first declared in 1838, when the publications of Schleiden and Schwann opened a new era in the history of organic science.

Dr. Robert Brown, of Edinburgh, had in 1833 demonstrated the existence of the cell "nucleus," and Raspail had in 1837 recognised the reproductive property of the cell; but he considered this cell as formed of granules spirally arranged about an ideal axis, assimilating it to the crystal in its mode of formation.

Schleiden, describing the nucleus as discovered by Robert Brown, gives it the name of cytoblast, or "cell bud." He speaks of it as a minute, yellowish oval or circular body,

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[o] Henle's *Allgemeine Anatomie*, p. 128.

varying in diameter from 0.0022 to 0.0001 Paris inch. Its structure is generally granulous; its consistence varying from a softness that will almost dissolve in water, to a considerable firmness. He says: "In very large and beautifully developed cytoblasts, there is observed a small, sharply-defined body, which, judging from the shadow which it casts, appears to represent a thick ring, or a thick-walled, hollow globule."* This constitutes what has since been known as the "nucleolus," of which two, three, and sometimes four have been observed in a single nucleus.

He considers starch in the plant, as fat in the animal, to be a "superfluous nutritive material, deposited for future use."† When about to be used in new formations it is changed into sugar or gum, which forms homogeneous fluids in which minute granules soon appear. Larger, sharply-defined granules next appear, forming the nucleolus, around which the smaller granules aggregate to form the nucleus. After these have grown to their full size, in a free state, a delicate, transparent vesicle rises upon their surface. This constitutes the cell wall. It rapidly increases, till the cytoblast appears as a small body, enclosed on one of the side walls. Within these cells (as well as in the fluid without) new cells arise, which fill up and absorb the mother cell.

The theory of *exogenous free cell formation* in vegetables was applied by Schwann to animal tissues. He views the nucleolus and nucleus as forming from a homogeneous blastema, precisely as in Schleiden's views. This nucleus grows by the deposition of new molecules between those already existing. The nucleus may remain solid if the molecules are equally deposited through its whole substance, or it may become hollow if they are deposited principally on its surface. When it has developed to a certain stage, a cell wall is formed around it. This outer stratum he believes to differ in sub-

* *Contributions to Phylogenesis*, p. 224.

† *Ibid*, p. 236.

stance from the blastema from which it is formed. This stratum thickens, by the deposition of new material, into a membrane, which expands by the same process of deposition, becoming separated from the nucleus. The space between the nucleus and membrane becomes filled with fluid, which constitutes the cell contents, the nucleus remaining attached to a spot on the inner surface of the membrane. These views, as well as his views of cell multiplication, are identical with those of Schleiden, his merit resting in their application to animal tissue, in which observation is so much more difficult than in the case of plants, to which Schleiden confined his experiments.

Schwann's location of the nucleus in contact with the cell wall does not agree with the results of modern observation, which show the nucleus to be usually central in position. So the primary importance of the nucleolus is no longer a part of the cell theory. But considering their powers of observation, the results obtained by these two explorers are of the highest value, and in many points still constitute accepted data of science.

In 1841 Henle published his observations. These agree essentially with the preceding views, except that he recognises three modes of cell multiplication—by budding, by production within previous cells, and by division. This latter mode was hesitatingly acknowledged by Schwann, who, however, failed to perceive its importance. Henle makes no mention of the nucleus, as concerned in this process of division, describing the cell wall as furrowed, deeper and deeper, until division takes place. Dr. Martin Barry, in 1841, first clearly enunciated the modern idea of cell multiplication. He says:

"I am very much inclined to believe that in the many instances in which the authors on 'cells' have described and figured more than one nucleolus in a nucleus, there has been either an incipient division of the nucleus into discs, or the nucleus has consisted of two or more discs; the nucleoli of those authors having been the minute and highly-refracting cavities or depressions in the discs. If this has really been

the case, it affords evidence that reproduction of cells by the process I have described—namely, by *division of the nucleus* of the parent cell—is universal."*

In 1845 Prof. John Goodsir, in his "Centres of Nutrition," showed the power of these centres to gather nutritive materials from exterior sources, and to distribute them by development to the different organs. He views each organ as originating in one central or capital cell. "It would appear that from this central cell all the other cells of its department derive their origin. It is the mother of all those within its own territory. It has absorbed nutriment for them while in a state of development, and has either passed them off after they have been fully formed, or have arrived at a stage of growth when they can be developed by their own powers. A nutritive centre, anatomically considered, is merely a cell, the nucleus of which is the permanent source of successive broods of young cells, which from time to time fill the cavity of their parent, pass off in certain directions and under various forms, according to the texture or organ of which their parent forms a part."† This is distinctly opposed to the previous doctrine of free cell growth within a homogeneous blastema, and enunciates the theory of *omnis cellula e cellulâ*, to which the extended observations of Prof. Virchow have since given such weight.

The idea of free cell growth, however, is still entertained by many eminent physiologists. Dr. Bennett, of Edinburgh, in 1853, published views which he has lately reiterated. He believes that "the ultimate parts of organisation are not cells nor nuclei, but the minute molecules from which these are formed." He views these as possessing independent vital powers, and arranging themselves directly into cells, fibres, and membranes. Todd and Bowman, in 1856, and Dr. Carpenter, in 1865, believe in occasional free cell development.

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* *Philosophical Translations for* 1841, pp. 207-8.

† Article in "Anatomical and Pathological Observations," 1845.

In 1858 appeared Prof. Virchow's "Cellular Pathology." The cell, in his hypothesis, consists of cell wall, cell contents, and nucleus, the life of the cell being confined to the nucleus, its function to the cell contents. He does not—in his later expressed views—consider the cell wall an essential feature, but supposes that a nucleus surrounded by a molecular blastema is sufficient to form a cell. The physical life of the body wholly resides in these cells. He believes, with Prof. Goodsir, that the cells are aggregated into special territories or communities, the cells of which are dependent on each other and on a central cell from which they originated. The intercellular substance, in his view, depends upon the cell which it surrounds, sharp boundaries often dividing the material pertaining to one cell from that belonging to another.

He believes all cell growth, whether productive of healthy or morbid tissue, except epithelium, to result from the metamorphoses of a special cell. This cell is that of the most extensive tissue of the body, the connective tissue, which is found in the structure of all the organs. In the formation of this tissue we have the multiplication of the primitive cell without change of character. In other conditions it multiplies under secondary forms, producing cells adapted for special functions, as the muscular and nervous fibres. The cells of diseased formations have no special properties, but are similar to healthy cells of other organs. Virchow says: "It must be laid down in advance, as a fundamental principle, that whatever man produces will be something human, and what an animal produces will be something animal." No type of cell can appear in disease not natural to the healthy body, but when cells normal to one territory show themselves out of place, by peculiar conditions affecting the connective tissue, they constitute a diseased formation, in which, as in cancer, they may increase indefinitely.

Virchow further supposes that, by anastomosis of one cell with another, canals or tubes are formed, which are supple-

mentary to the blood and lymphatic vessels. In this view he is sustained by most German histologists, though it finds little favor with English and American writers. Such are the main points in the doctrine of the great German authority on "cell life," and fairly represent the subject as it stood ten years ago.

The French histologists, however, differ from the Germans in their doctrines of organic formation. The views of M. Robin, who is a fair representative of the French school, are as follows: He looks upon the animal frame as made up of elementary forms of which he finds three varieties—fibres, tubes, and cells. These fibres are often of great length, as in the nervous fibres, their diameter frequently not greater than .001 millimetre. The capillaries illustrate the tubular element. They are formed in new tissues by the growth of tubular projections from contiguous capillaries, these projections meeting and uniting to form new tubes. His idea of the cell contains nothing essentially different from those already noticed. He distinguishes four features in the production of these elements, named respectively, segmentation, genesis, epigenesis, and germination. The yolk of the ovum consists of granular matter in a hyaline substance. These granular particles aggregate to form a nucleus. Segmentation originates in this nucleus, the yolk separating into numerous globules. The second mode of growth operates when the globules have become very small by successive segmentation. They now dissolve, producing a blastema, in which nuclei soon appear. Epigenesis consists in the growth of prolongations of transparent matter at the extremity of these nuclei, producing the fusiform bodies, which originate the connective tissue. We have seen how Virchow supposes the whole body to result from the growth and transformation of the cells of this tissue. Germination is almost wholly confined to vegetables, being the process known as budding, in which a prolongation of the cellular mass becomes separated from its parent cell, and grows into an independent cell capable of similar increase.

The only animal example known of this mode of increase takes place in the ovum previous to fecundation. From the hyaline substance of the yolk. prolongations issue, which become round, separate, and begin an independent existence. He teaches the doctrine of free cell formation; believing that cellular masses originate directly, by genesis, from the blastema of the blood.

Many other writers have communicated interesting facts concerning the growth and function of the cell. It has long been known that a peculiar contractile power belonged to the substance of the lower animals, which was attributed to a material called sarcode. Max Schultze, in 1861, showed that this sarcode was analogous in character to the contents of the animal cell, and that the world of infusorial animals is entirely made up of cells, in many cases a single cell composing a complete animal.

The idea of the cell being a vesicle of fluid enclosed in a defined wall had been doubted by various previous observers, and was expressly denied by Schultze. He defined the cell as *protoplasm surrounding a nucleus*. This was the first clear declaration of the more modern idea of cell life. In his words: "the cell leads in itself an independent life, of which the protoplasm is especially the seat, although to the nucleus, also, undoubtedly falls a most important, though not yet precisely determined, *rôle*. Protoplasm is for the most part no further distinct than that it will not commingle with the surrounding medium, and in the peculiarity that with the nucleus it forms a unit. Upon the surface of the protoplasm there may form a membrane, which, although derived from it, may be chemically different, and the assertion that it is the beginning of a retrogression may be defended. A cell with a membrane cannot divide itself, unless the protoplasm within the membrane also divides itself."* Later observers show that even the nucleus is not an essential part of the cell, giving several instances in the lower animal creation of single celled animals without nuclei.

* *Protoplasm der Rhizopoden*, 1863.

With this brief historical sketch of the doctrine of cell life, we are prepared to examine more in detail the hypotheses of Professors Beale and Huxley, and to give a fuller description of the characteristics of the unit of organic life.

This unit consists of minute individual particles of a peculiar compound of the four principal elements—oxygen, hydrogen, carbon, and nitrogen. The cell, then, reduced to its necessary principles, is a minute mass of a transparent jelly-like substance, without essential form, color, or structure. This transparent jelly has peculiar powers. If the stinging hair of the common nettle be examined under high microscopic power it will be found to consist of a delicate sheath of wood, containing a semi-fluid mass of protoplasm, which is full of minute granules. Within this layer of protoplasm is a limpid fluid. The protoplasm is incessantly active. It is subject to slowly-moving contractions, which pass along it in a wave-like movement. In addition to this display of activity, the granular particles flow in steady streams through channels in the protoplasm. Adjacent currents usually flow in similar directions, streaming up one side of the hair and down the other. But partial currents exist which flow in opposite directions. Thus, occasionally, trains of granules are seen flowing swiftlyin opposite directions, within a twenty thousandth of an inch of each other. Sometimes such streams come in contact, and a struggle ensues until the stronger predominates. These motions are supposed to result from contractions of the protoplasmic substance, which are too minute to be seen by the best microscopes.

This power of spontaneous movement characterizes all forms of protoplasm. In all cases, whether in the undefined particle of jelly called the Amœba, or in the free cell of a complex animal, a special mobility is displayed. In the single-celled animals and plants the variation of form is incessant. So in the colorless corpuscle of the blood of the higher animals a similar movement appears. It sends out prolongations of its substance, and creeps about as if endued with life. Huxley says:

"The substance which is thus active is a mass of protoplasm, and its activity differs in detail rather than in principle from that of the protoplasm of the nettle. Corpuscles of essentially similar structure are to be found in the skin, in the lining of the mouth, and scattered through the whole framework of the body. Nay, more: in the earliest condition of the human organism, in that state in which it has just become distinguishable from the egg in which it arises, it is nothing but an aggregation of such corpuscles; and every organ of the body was, once, no more than such an aggregation. Thus a nucleated mass of protoplasm turns out to be what may be termed the structural unit of the human body. As a matter of fact, the body, in its earliest state, is a mere multiple of such units, and, in its perfect condition, it is a multiple of such units variously modified. Beast and bird, reptile and fish, mollusk, worm, and polype are all composed of structural units of the same character; namely, masses of protoplasm with a nucleus. At the very bottom of the animal scale even this simplicity becomes simplified, and all the phenomena of life are manifested by *a particle of protoplasm without a nucleus.*

"What has been said of the animal is no less true of the plant. Imbedded in the protoplasm of the broad or attached end of the nettle hair, lies a spheroidal nucleus. Careful examination proves that the whole nettle is made up of similar masses of protoplasm, each contained in a wooden case. Traced back to its earliest state, the nettle arises, as the man does, in a particle of nucleated protoplasm. And in the lowest plants, as in the lowest animals, a single mass of such protoplasm may constitute the whole plant, or the protoplasm may exist without a nucleus. It may well be asked, then, why we call one such mass 'plant' and the other 'animal.' The only reply is that, so far as form is concerned, animals and plants are not separable, and that, in many cases, it is a mere matter of convention whether we call a given organism an animal or a plant."*

Protoplasm is a voracious feeder, and needs a constant supply of aliment. If it be surrounded by a fluid mass of alimentary matter, it is found rapidly to absorb it and expand in bulk. This expansion is soon followed by division into two cells, a line of constriction passing through the nucleus, till the globular mass assumes a dumb-bell shape, and finally separates into two portions, each of which is capable of similar increase. If the food supply fails, the cell loses its

* London *Fortnightly Review*, February, 1849.

mobility, gathers into a spherical mass, contracts in size, and finally dies of sheer starvation.

Various writers have considered these minute organic units as preserving an individual life even when composing a portion of a complex animal. Schleiden says: "Each cell leads a double life: an independent one, pertaining to its own development alone, and another incidental, in so far as it has become an integral part of a plant. It is, however, easy to perceive that the vital process of the individual cells must form the first, absolutely indispensable basis."* This thought has been extended by other writers, who consider each higher animal or plant as a community of individual cells, each with its own life force and its independent existence; as complete an individual, in fact, as are those minute beings which consist each of a single cell. This idea has an analogy in those communities of polypes, each individual of which performs a special function; so that the life of any member of the community is dependent on the action of all the others, just as the life of the cell of an animal organ is dependent on the mutual action of all the organs. Certainly, when we see the free cell of the human body to be similar in form and function to the single-celled animal, moving, growing, and multiplying in the same manner, the conclusion is natural that the one possesses as distinct an individual life as the other, the only apparent difference being that one is adapted to derive its aliment from the juices of the animal body, the other from free fluids. There is thus no essential difference, in condition and character, between the two, and the one has as much real claim to the title of individual as the other.

The previous considerations lead us to Dr. Beale's hypothesis. This latest of the cellular hypotheses has certainly the merit of originality, and reduces the phenomena of cell function to a simplicity, which, in itself, predisposes us to accept it, even if we must question some of his conclusions. In this hypothesis there are three forms of material in the animal

* *Contributions to Phylogenesis*, p. 232.

body, named, respectively, *alimentary*, *living*, and *formed matter*. He uses this phrase, "living matter," to replace the term "protoplasm," which he considers to have become indefinite in meaning, from being applied to various distinct substances by different writers. In a late work he replaces this phrase by the new-coined word "bioplasm," which certainly is not an inapt term to replace protoplasm, though we cannot perceive why the latter is not sufficient for the purpose.

This bioplasm includes the nucleus, protoplasm, and cell-contents of other writers. It composes the central portion of the cell, the formed matter being deposited upon its surface. He describes it as a transparent, colorless, and structureless substance. The simplest animals and plants, and, in the higher animals, the pus and white-blood corpuscles, are nearly pure bioplasm. In it alone reside the properties of spontaneous motion, growth, and multiplication. From the alimentary matter with which it is surrounded it produces new bioplasm, grows and divides, each separated portion commencing an independent existence and manifesting these same properties. It may be stained by an ammoniacal solution of carmine; and the younger it is the deeper stain it takes—this stain clearly showing the limits between the living and the formed matter. Bioplasm is not confined to the nucleus. The nucleus may be simply a new centre of living matter, surrounded by older bioplasm. The nucleolus, which takes a deeper stain, is a still younger centre. Only by use of the stain is it possible to define the limits of the bioplasm; as in some cases it is confined to the nucleus, in others it comprises part or all of the cell-contents.

Upon the surface of this bioplasm gathers a layer of formed matter, which has lost the active properties of the former, and is distinguished as passive, or dead material. Its increase is at the expense of the bioplasm, which in certain cases entirely dies, or becomes formed matter. In this matter reside the properties of the tissues of which it forms a

part, as the contractility of muscle and the neurility of nerve. It is protective in epithelium, diffluent in the milk cell, hard and elastic in cartilage. It is not stained by the solution of carmine; or, if it takes a stain, this may be washed out by glycerine, which has no effect on stained bioplasm. He supposes this stain to result from an acid reaction of the bioplasm, which precipitates the carmine from its alkaline solution.

The particles of bioplasm vary in size from one one-hundred-thousandth to one five-hundredth of an inch in diamter. It seldom attains the latter size without division into smaller particles. As composing the nuclei of fully-formed cells, it varies usually from one three-thousandth to one six-thousandth of an inch in diameter.

In the growth of epithelium, we have a good instance of the mode of production of formed material. In the deeper layers the cells are almost pure bioplasm. These grow and divide, pressing the older cells outward. As the cells thus move toward the surface, the bioplasm grows by absorption of the alimentary material, while the conversion of a portion of it into formed material increases its passive exterior layer. Thus, up to a certain point, both constituents of the cell increase, the cells, in consequence, constantly growing. As these cells are pushed further out, however, by the production of new ones in the interior, the layer of formed material becomes so thick and dense as to hinder the aliment from readily penetrating to the bioplasm. This, then, ceases to increase in quantity, and, being constantly changed into formed material, it follows that, when the cell reaches the surface, the bioplasm has become nearly or wholly converted into formed material, the exfoliations of the skin being confined to this dead or passive substance. If, then, a cell contain a large excess of bioplasm, we may consider it as young; but if the formed material is largely in excess, the cell is old and has become inactive.

Every cell comes from a pre-existing cell originating only in the bioplasm. The division of this is not generally sym-

metrical, as is so often described, but rather resembles a budding and dropping off of portions of bioplasm, which grow to form the new cell. The bioplasm is alone concerned in cell nutrition, taking up the pabulum of the blood, which is converted first into new bioplasm, and eventually into formed material. The thickening of this layer of formed material hinders absorption, and the unfed bioplasm, which is constantly assuming the passive or "formed" condition at its surface, gradually shrinks and disappears.

Dr. Tyson agrees with Dr. Beale in the main points of his doctrine, and is fully convinced that the cell comprises a living and active centre, enclosed by a mass of passive formed material. But in some particulars he dissents, saying that, "in appearance, living or germinal matter is *often* structureless, especially as constituting the living, moving matter of the protozoa, or lowest animals of the rhizopod type. Yet it is not always structureless, but often *granular* in its appearance, and as constituting the mass of rapidly-growing cells in the higher animals is, indeed, *usually* granular."* These granules are shown to form part of the bioplasm, by their being the portions most deeply stained by the carmine.

"In the nutrition of the cell, the pabulum comes to it from the periphery, being strained through the formed material, and the new germinal matter takes its place in or near the centre of the original mass, constituting a new centre of germinal matter, which may be the nucleus, if no other circumscribed centre be present, or the nucleolis, if it be deposited within such a centre. Other new centres may again take position within these, and assume the relation of nucleolus to the original nucleolus, which now becomes the nucleus—an old centre of germinal matter—while the original nucleus has probably been converted into the second constituent of the cell, the formed material."†

Germinal or living matter—or bioplasm, as Beale now prefers to term it—has motive powers, both of part of its substance causing change of shape, and of the entire mass producing change of position. These movements are probably

* *Cell Doctrine*, p. 107. † *Ibid*, p. 109.

intended to obtain pabulum, as is plainly seen in the actions of the Amœba, which embraces a particle of food by its protrusions. "These movements are less decided in the cells of the higher animals, but are of constant occurrence."*

The bioplasm is converted into formed material by influences, "some of which may partake of the character of oxidations." The formed material is as essential to the functions of the animal as the bioplasm. In fact, in this portion of the cell all its function resides. It is not correct, then, to speak of it as dead, when it so often displays vital endowments, as in the properties of muscle and nerve. The exterior portion of the cell is the oldest formed matter, the youngest lying next to the bioplasm. Intercellular substance, whether of cartilage or white fibrous tissue, is formed material, resulting from conversion of bioplasm, and is not a differentiated deposit from the blood-vessels.

It will be seen that these new views entirely reverse the older views of cell life. They claim that the cell, instead of being a vesicle—as held by the elder and by many later observers—is rarely vesicular, but generally more or less solid throughout. A like change is seen in the theory of cell growth. Schleiden and Schwann taught the following order of succession: First, the nucleolus; second, the nucleus; finally, the cell wall, embracing the cell contents. Now, the cell wall, when present, is considered the oldest part of the cell, the contents next in age, the nucleus younger, and the nucleolus youngest.

Dr. Beale describes several modes of formation of tissue from bioplastic matter. Thus, at the extremities of the roots and twigs of plants, prolongations of this living matter are produced, which burrow into the mass of nutriment in front, greedily absorbing it, and thus growing outwardly. In the rear, or portion furthest removed from the nutriment, formed matter is produced. Thus the growth of the plant continues, the living bioplasm constantly extending outward toward the sap of the extremities, and building woody tissue behind it.

* *Cell Doctrine*, p. 103.

In an opposite case, that of the growth of a human hair, the bioplasm lies at the base of the hair, deriving its nutriment from the interior pabulum, while formed matter is produced on its outer surface. This formed matter is pushed outwardly, as produced, till the complete hair consists of a long line of formed matter, with an active nucleus at its root.

May we not class both these forms of growth as vegetable? In the plant the formed matter is fixed and the bioplasm free to move; in the hair, the bioplasm, acting inwardly, is fixed, the formed matter, produced outwardly, is free to move; but the character of growth in both is essentially the same. Do not these examples illustrate the distinctive character of vegetable growth, absorption of aliment in vegetables occurring at a single fixed portion of the living matter, while production of formed matter occurs at the opposite portion, so that the plant growns linearly? We may assume animal growth to be characterized by a different and more advanced type, by supposing that in the animal cell the actions of absorption and formation take place simultaneously at all points of the surface, so as to produce globular extension. Thus the line or cylinder is the type of plant formation; the globe typifies the animal. But the animal is not lifted entirely above the vegetable kingdom of nature, nor is the plant utterly below the animal. There are points where the two kingdoms touch and commingle: animal life being a constant struggle to ascend above the vegetable; plant-life a struggle to enter the animal kingdom.

Thus we perceive the animal tending to linear growth in its extremities, or at the points least essential to life, while the globular rounding of these extremities shows the preponderence of animal force. In the hair, horns, and claws the growth is decidedly vegetable. In the more essential portions of the animal economy, the tendency to the globular form becomes more decided. The necessary organs of animal life, the heart, lungs, liver, etc., are all of a rounded form. The most essential portion of the highest animal, the head of man, is al-

most a complete globe. As man deteriorates in intellect this globularity decreases. In the lower animals the linear tendency appears in the head, particularly in the portions removed from the brain. The brain itself, the culmination of the animal, retains its globularity, even where the head is decidedly linear.

In the vegetable we perceive the superior product, the fruit, strongly simulating this globular tendency of the animal, while the less essential portions of the tree are linear in growth, and end in sharp points. Thus, in the fruit and seed of plants, we have instances of a progression towards the animal type of growth. We are aware that it is just these higher products of the plant which form the chief vegetable food of man, while the leaf, which is so largely eaten by animals, is the immature form from which the fruit arises, and may, perhaps, contain the connecting link between linear and spherical growth.

This argument, from exterior form, is sustained by facts in relation to cell growth. We have seen how the cell of the plant grows linearly, while the free animal cell encases itself in a globe of formed matter, or grows spherically. Now, in those portions of the animal economy which most simulate plant growth, namely, the fibres, it can be shown that the type of growth is essentially vegetable. Thus, in the fibre of muscular tissue, the germinal matter moves onward in one direction, being converted at its posterior end into fibrous tissue, while it absorbs pabulum in front. This is the precise action we have seen occurring in the plant. The fibres of yellow elastic tissue are formed in the same manner. So nerve fibre is similarly produced. Dr. Beale says: "In its young state nerve tissue is composed of masses of germinal matter, linearly arranged, and in close proximity." As conversion into formed matter takes place, these masses separate, each moving onward and producing formed matter behind its direction of motion, thus producing a fibrous tissue. These tissues of plant-like formation constitute the agencies of animal motion,

and are possibly inferior in character to the agencies of growth and of thought.

In the plant, on the contrary, we know that the fruit has another strong point of animal resemblance, besides that of form, in its power of absorbing oxygen and excreting carbonic acid, an action at variance with the normal action of the tree, and similar to that of animals.

While the fruit thus displays animal function as well as animal form, animal cells may be shown to display the normal vegetable function. In a paper read before a late meeting of the Association of German Naturalists, by Herr Wundt, he says:

"It used to be thought that the vegetable cell had to form organic matter, the animal cell to destroy it, so that by its alternation of creation and destruction the general end of life might be attained. At present we are compelled to admit that, if the vegetable cell is the seat of a phenomenon of reduction oy which carbonic acid is decomposed into its elements, a similar phenomenon is produced in the animal cell. Non-azotized combinations, it is now known, can be produced in the interior of the animal cell. Alexander Schmidt was the first to observe that, 'after addition of carbonic acid to blood, the total contents of carbonic acid diminished in certain circumstances.' This observation furnishes direct support to the idea of a phenomenon of reduction. The blood globule plays, therefore, a part analogous to that played by chlorophyll in the vegetable cell in contact with the carbonic acid of the atmosphere. The only difference which exists is, that in the blood cell there is, besides, a process of oxidation going on which surpasses the process of reduction. Just as chlorophyll absorbs carbonic acid so does the colorless corpuscle absorb oxygen, and this corresponds completely to the absorption of oxygen by the blood cell in the lungs."*

The modes of composition of the plant and animal seem the necessary conditions for their special types of growth to operate. The masses of protoplasm in the plants are each surrounded by a wooden case, which cases are joined together, the growth being linear within these cases. In the animal, the particles of protoplasm are imbedded in a mass of interstitial formed matter, which separates them from each other, and which is everywhere permeated by the alimentary matter required by the cell.

* *Quarterly Journal of Microscopic Science*, 1869, p. 179.

But to say that growth is in a line or in a sphere is not sufficient. What is the primary cause of these modes of growth? There must be some essential cause which distinguishes whether a certain germ shall produce a plant or an animal. This cause, most probably, is a motive one, there being one peculiar mode of motion essential to the vegetable condition, and lifting it above the inorganic world, and a second mode of motion which is peculiar to the animal. That of the plant is possibly a property of spiral motion, that of the animal a vortical motive relation; the first typified in the inorganic world by the magnet, the second by the galvanic battery.

The spiral force of motion in the plant is productive of its cylindrical form and of its pointed extremities, which are the natural results of such a force. The peculiar spiral fibres of the plant, of which no use is known, are perhaps the visible signs of this motive process, particularly as their formation can be seen to result from the normal growth of the cell.

Schleiden tells us that "the universal and altogether absolute fact at which we first arrive is, that these spiral fibres are never formed free, but are developed in the interior of cells." These cells have, in the young state, simple and very delicate walls. They are filled with starch, which is first converted into gum, and then into jelly. "This jelly is converted, at its outer surface, into vegetable fibre, following the direction of a spiral line. The idea involuntarily forces itself upon the mind, that the spiral formation is the result of a spiral movement on the walls of cells between them and the central jelly." This fibre first appears as spiral stria upon the jelly. These stria next become lines on a cylinder or cone of gelatine within the cell. The jelly next appears as a broad spiral band, whose surface displays delicate fibres. Eventually, in some cases, the whole of the jelly is converted into spiral fibre. This process occurs in all cells, under certain circumstances, and "the influence of the spiral fibre remains altogether obscure and unexplained."* There is certainly strong

* *Contributions to Phylogenesis*, pp. 245–7.

evidence in favor of the spiral motive force in vegetable life.

In animal cells, though the vortical force of motion does not mark out its mode of operation so evidently, yet the fact that it draws in aliment and secretes formed matter at the whole periphery, tends directly to this conclusion. The whole animal economy is a succession of vortices. Whether we consider the blood, the nervous fluid, or the various other agencies, each follows the line of a vortex, the heart being the centre of the circulation, the brain of the nerve currents, etc. The vortex would produce a globe, were not other agencies at work here, as we have seen, partly of a vegetable growth force. We perceive the preponderance of the vortical agency in the rounded extremities of the longitudinal limbs, and of the bones, so markedly different from the pointed extremities of plants. We will consider this idea more fully, in its application to cells, further on.

Dr. Beale uses the term, "living matter," in a real, not in a figurative sense. He takes strong exception to Huxley's idea of chemical agency in the action of the cell, and argues that the powers displayed by his "living matter" are inexplicable by any of the known laws of nature. He thinks its power of spontaneous movement beyond the ability of natural law, as also its power of forming material similar to itself out of the aliment conveyed by the blood. Dr. Tyson agrees with him in supposing that the faculty displayed by bioplasm to form new bioplasm out of pabulum unlike itself, is evidence of a force above the physical forces of nature. They credit the cell with a property of life or vitality entirely removed from the kingdom of physics, and supernatural in its origin and character. Yet it is always unsafe to declare a fact inexplicable simply because we cannot explain it, and to place the causes of observed phenomena beyond the limits of nature because they are not visible to us within those limits. Former observers have not felt it necessary to remove the difficulty into the realm of the supernatural. Prof. Huxley declares

that the matter of life is composed of ordinary matter, and is again resolved into ordinary matter when its work is done. "A solution of smelling salts in water, with an infinitesimal proportion of some other saline matters, contains all the elementary bodies which enter into protoplasm. Yet an animal cannot make protoplasm. It must take it ready made from some other animal or plant, the animal's highest feat of constructive chemistry being to convert dead protoplasm into the living matter of life, which is appropriate to itself. The plant, however, takes carbonic acid, water, and ammonia, and converts it to the same stage of living protoplasm with itself, though some of the fungi need higher compounds to start with. These elements are related to the protoplasm of the plant as the protoplasm of the plant to the animal. But protoplasm once produced, all the phenomena exhibited by it are simply its properties, just as the phenomena exhibited by water in its various stages are properties. They do not take place through the guidance of any principle called 'vitality,' any more than the phenomena of water take place by virtue of 'aquosity.'"

We might adduce numerous other expressions of the highest authorities on this subject, all tending to the same conclusion; but these must suffice. Unless the peculiar activity of the cell is proved to be really spontaneous, and to operate entirely from the force of some internal impulse, without reference to exterior circumstances, no "vital" agency of action can be maintained. If its motion results from exterior influences, it has no more vitality than the magnet or the falling stone. We have, in these, movements of matter toward other matter, produced by causes which we have agreed to call "magnetism" and "gravitation," but of whose character we are as ignorant as we are of the nature of the special force of the cell.

The cell movements are not made at random, but always in the direction of pabulum, and are perhaps governed in extent by the quantity and contiguity of the aliment. This

seems to point to an attractive relation between the two forms of matter as its cause, the protoplasm moving towards matter for which it has a chemical affinity, just as the magnet moves towards matter for which it has a magnetic attraction. This seems an external, not an internal, relation of force.

If the pabulum be removed, the life force ceases to act, the cell obeys the law of fluid aggregation and becomes a sphere. Were it a real vitality it should display greater activity where the removal of the pabulum rendered this necessary. If it be simply an attraction, the action is clearly explicable. For we see that, when the strong exterior attraction ceases to act, the weaker attraction to the centre displays itself, and the syherical form results.

Beale's hypothesis seems to claim that there is an essential distinction between the germinal and the formed matter, expressed by the opposite terms "living" and "dead," the living force of the protoplasm elaborating the aliment into a third form of matter, which is deposited on its surface. But the only apparent warrant he has for this is, that the interior substance is stained by carmine, while the exterior is not. This is not enough for so radical an assertion. He admits that the stain grows fainter from centre to surface. It will be difficult then to prove a dividing line, where one sort of matter ends and another commences. It seems far more probable that a gradual solidification of the exterior matter is the cause of its inactivity, it becoming passive as it becomes stiffened and membraneous. This stiffening of the external layers is probably not sufficient to hinder the action of osmose, though it may render these layers chemically inactive, the absorbed material passing through them and being affected by the more active interior substance.

The newest formed part of the cell then, being the most plastic, displays the greatest chemical activity. The pabulum thus passes to the new formed centre, is converted into protoplasm, and in its turn displays a similar activity. Thus we may suppose the absorbed material as being converted into

protoplasm in a greater and greater degree as it approaches the centre, this force of conversion being greatest in the nucleolus, or centre of activity. With our present knowledge of chemistry we are unable to understand the reactions taking place within the cell, but this does not warrant us to ascribe them to vitality. There are known chemical actions quite as mysterious to us. The chemical force called catalysis produces changes for which we are unable to account. It shows us how a substance, itself inactive, can induce chemical change in a second substance, through some unknown influence of contact.

It may be possible that the active protoplasm of the cell induces a catalyptic change in the absorbed material. We know that this alimentary material contains the elements of protoplasm, though probably some of them in excess of the correct proportions. The influence of contact with the active protoplasm may possibly cause a production of new protoplasm from the aliment, by a breaking up of its former composition and a recomposition of its elements in the proper proportions to form this substance. Though we have no directly analogous instance of chemical action, it seems more reasonable to suppose the possibility of such an action, than to take the last refuge of despairing science, and place the whole action in the kingdom of the supernatural.

In such a case the residual matter, not concerned in the composition of the protoplasm, may combine into a new compound, probably acid in its character. Under such an hypothesis we have a recomposition of the pabulum into protoplasm, and an acid residue. The latter being foreign to the action of the cell, is ejected by exosmose, and may form the juices of the tissues, which are known to give an acid reaction, while its constant formation in the cell may give the acid reaction which Beale supposes to produce the precipitation of carmine.

Let us consider the circumstances affecting the cell. It is in contact with an alkaline fluid, containing material neces-

sary for its increase, and has an acid reaction interiorly. Under such conditions osmose must operate, two opposite currents resulting—one of the aliment toward the centre, the other of the acid substance toward the surface of the cell. But under our hypothesis this absorbed aliment is converted into protoplasm and acid. The acid is thus constantly renewed interiorly. But the exterior fluid is in constant motion, and as fast as it loses its active properties by cellular absorption it is replaced by fresh, active fluid. Thus we see a possible arrangement of conditions for a constant action of osmose, and incessant production of protoplasm.

If, by removal of pabulum, this action of osmose ceases, the substance of the cell gathers into a spherical mass round its centre, the action of solidification, or stiffening, involves more and more of the protoplasm, and the activity of the cell is eventually lost. If, on the contrary, the pabulum be in excess, the protoplasm rapidly increases, division of the cell takes place, and new centres of action result. This process of division may possibly result from the vertical mode of motion which we supposed to be peculiar to the animal cell. The osmotic action which we have just described is a true vortex, there being a constant flow of matter inward toward, and a second constant flow outward from, the centre, these two opposed currents acting from and toward the whole periphery. But when the amount of active protoplasm in the cell has increased to a certain extent, the centre of action may cease to be a point and become a line or an extended space, or two or more points of superior action may appear. The osmose then, instead of being directed to a single point, may act toward two points. Thus, two vortices of motion would be established within the cell, their centres within the active substance, but separated from each other. The tendency of each vortex to form a sphere of the matter in which it operates would produce all the phenomena of division—the furrowing of the wall, the dumb-bell shape, and the gradual contraction of the centre—till the single cell is divided into

two, each of which becomes spherical. Immediately that the two vortices are formed, each may commence to throw up a wall of formed material at its exterior, so that a dividing wall of formed material gathers between the two active centres. Division occurs through this wall; so that when separation occurs, each new cell is already entirely enclosed in a wall of formed material. The cases where two or more nucleoli appear in a single nucleus may be results of this formation of new centres.

It is probable that, in the young vegetable cell, growth and multiplication proceed under the same law, this cell not being limited to the distinctive spiral mode of motion until it has become forced by its surrounding conditions to act linearly. Osmose may act here as in the animal cell, the activity confined to one extremity, the formed matter occupying the other, and division of cells occurring, as before, by a previous division of centres of osmotic action.

The organic cell, then, under such an hypothesis, may be considered as an especially active centre in a mass of protoplasm, which becomes the centre of a vortex of moving material. The mass growing, as a consequence of its action, new centres of vortical motion arise, each of which constitutes a new cell; and thus, by a continuance of this process, the original cell of the ovum multiplies into the vast aggregation of cells of the perfected animal. This idea will apply equally to the theory that cells arise only from pre-existing cells, or to the opposite view that cells may arise in a homogeneous blastema. For centres of vortical motion may possibly arise in such a blastema, the effect of each of which would be the spherical aggregation of matter and the formation of a cell.

In Darwin's theory of pangenesis, it is supposed that each of these minute organic units has an individual character of its own. From each cell infinitesimal portions or germs constantly pass off, and are disseminated throughout the body, these never developing into cells until they return into their

native conditions. In the ovum countless numbers of these germs aggregate from the parent bodies, and become developed into cells of organs which display the individual characteristics of the parent organs. By this theory he accounts for the facts of hereditary transmission. He supposes that such germs, from one or the other parent, may pass through many generations undeveloped, and when at last development occurs, the characteristics of the originating organs or persons may appear in a remote descendant.

ART. VIII.—1. *Speeches by Minor Politicians in Congress and Elsewhere.* 1866-1870.

2. *Sermons, by Political Ministers of the Gospel.* New York, Boston, and Philadelphia. 1866-1870.

3. *Daily Articles in the Newspaper Organs of Republicans, Democrats, Radicals, Etc., passim.*

To most persons it seems a harmless thing for politicians contending for office to abuse each other; and the opinion is equally general that those who succeed in attaining office can hardly be abused too much. But by no other means is more mischief done in a republic than by this partisan defamation. Were the history of all the great republics of the world, now passed away, carefully examined, it would be found that nothing contributed more to their fall than the demoralization thus produced.

If such scurrility as we are in the habit of hearing and seeing daily, during election times, is not invariably pernicious, it is certain that it rarely, if ever, does good. The only excuse those who practise it most can make for it is, that it deters men of bad character from becoming candidates for office by warning them that if they do their iniquities will be exposed

to the world. But that it has no such effect in one case out of twenty might easily be proved. Unhappily we have but too much data to show that it is those who have proved themselves most unscrupulous and most devoid of principle, that have least diffidence in soliciting the suffrages of their fellow-citizens. Nor is the fact strange. Is it not, on the contrary, what we should expect?

Those who are prevented by the fear of abuse from coming forward as candidates for office, are, in nineteen cases out of twenty, men who have led a blameless life. We do not mean that all of this class are so deterred. A republic were but a mockery were upright and honorable men not willing to serve it, in spite of all the obloquy their services—even when most faithfully rendered—might entail on them.

It would be idle to think that our own republic could have attained the greatness, power, and influence it possesses to-day had it not been served by men possessed of integrity, as well as ability; nay, had not the majority of its principal functionaries been of this character—had they not, at least, been very different men from what nearly all have been represented by their opponents—instead of having become the colossal power it is, it would ere this have either passed out of existence altogether, or been broken up into a half dozen fragments.

If no good, but much evil, arises from partisan abuse before the candidates are elected, what can be said of its influence on the same men after they have been elected? Perhaps a still more important question is, What is its influence on the public at large? Before we attempt to answer either, let us see what is the ostensible object of those who practise it. The best explanation they can give—indeed the only explanation—is, that they attack office-holders either to deter them from doing wrong, or to force them to do good.

But who will believe that, in one case or the other, the means are adapted to the end? Are public functionaries to be frightened like children, by calling them hard names? Is it likely that they will take advice more readily on being called

knaves, scoundrels, robbers, or liars, or all together, than on being addressed in the language of civility and moderation? No one would maintain for a moment, on reflection, so absurd a proposition. Even in despotisms men revolt against being forced by abuse; history shows us how often they prefer the dungeon or even the gibbet. Cruel and unscrupulous as Nero was, if he wanted to be strictly obeyed by his own functionaries in any thing he set his heart upon, he generally found it advisable at least to make his wishes known to them in a civil manner. It was precisely because he did not always pursue this course—because he became more and more insolent and overbearing as he attained more experience in the exercise of despotic power—that finally his outraged subjects struck him down.

That any man should be subjected to habitual abuse on account of his political opinions is sufficiently absurd; but that all entertaining the same or similar opinions, and happening to be in office, should be subjected to similar treatment, would seeem incredible, were it not attested in a hundred forms. Nor is the habit confined to any party; in this respect at least, republicans and democrats are alike. It need hardly be said that the men of education and culture of both parties, that is, those who have learned to think, form exceptions to the rule. These may be enthusiastic republicans, or enthusiastic democrats, and yet be willing to believe that those who differ with them may be honest men, or that, if they are not honest, it is not on account of that difference.

But, unfortunately, there are too few of this class—so few that they can hardly be said to affect the general rule—and hence it is that all the great writers on the science of government, from Aristotle to De Tocqueville, have maintained that in no form of government is thorough education more essential to the well being and preservation of the state than in a democracy.* It is but natural that men who are not educated

* "But of all things hitherto mentioned, that which *contributes most to preserve the state* (in a democracy) is, *to educate the children*," etc.—Aristotle's *Politics*, book v, chap. ix.

"C'est dans le gouvernement républicain que l'on a besoin de toute la puissance de l'education."—Montesquieu's *De L'Esprit des Lois*, liv. iv, chap. v

should deny this, and say that as the system of government is simple and easy in a republic so should the system of education. According to this numerous class there should be no such abstruse studies as require much time and labor; above all things there should be as little Greek and Latin in republics as possible, for if these are not the dialects of Satan, as they were regarded by some of our pious ancestors, we are told that, at least, they are dangerous things which every honest and thrifty citizen should set his face against!*

It is because opinions like these are entertained by nine-tenths of our public men and men of wealth of all parties, that the mutual partisan defamation we complain of is so nearly universal in its character. Under the most favorable circumstances there is a stronger tendency to accusations and recriminations in a democracy than in any other form of government.† No amount of knowledge or public virtue would entirely set aside that tendency. This we see fully illustrated in Athens in the time of Pericles. It is admitted by all historians who have treated the subject, that no man combined more virtues with a thorough philosophical education than Pericles; yet there are few errors or even crimes attributed to public men by their political opponents of which he was not accused. He was accused of devoting the public treasure to his own private purposes. Those magnificent structures which are the glory of Athens, even in their ruins, were a constant source of chagrin to him, not only during their construction,

* "It is important that those who, by their nature or their fortune, are destined to cultivate, or prepared to relish them, should find schools where *a complete knowledge of ancient literature* may be acquired, and where the true scholar may be formed. A few excellent universities would do more towards the attainment of this object than a multitude of *bad grammar schools*, where superfluous matters, badly learned, stand in the way of sound instruction or necessary studies. All who aspire to literary excellence in democratic nations ought frequently to refresh themselves at the springs of ancient literature. *There is no more wholesome medicine for the mind.*"—De Tocqueville's *Democracy in America*, vol ii, chap. xv, p 76.

† As the rulers of democratic nations are *almost always* suspected of dishonorable conduct, they in some measure lend the *authority of the government to the base practices of which* they are accused."—*Ibid*, vol. i, p. 287.

but as long as he lived; for he was persistently charged with expending on those buildings ten times the amount of money that was necessary. Although he employed the most renowned architects and sculptors—including Phidias, Calicrates and Ichinus—he was accused of having been guided only by his political or personal preferences; in a word, he was charged with "getting up jobs" much more for his own benefit and that of his adherents than for the public benefit. It was in vain that great and good man urged that, much treasure as those various edifices cost, they were worth vastly more.* How true this was all posterity has borne emphatic testimony; but it did not save Pericles from the humiliation of being put on trial on the charge of squandering the public money, although even his opponents were obliged to acquit him and bear testimony to his innocence.

It is well for us to remember that, while it is true that Pericles was more honored than ever after this, if such was possible, the spirit of defamation which produced it was rapidly corrupting the Athenian republic and hastening its fall; it should also be remembered that those who were chiefly instrumental in those systematic efforts made for the disgrace of Pericles, found their own turn another time; nor did they fare so well, when it came, as Pericles did. This is true, for example, of Cimon, his worst enemy, who was expelled from the city by the ostracism, as dangerous to the republic from his intrigues, and from the influence which he was known to exercise over a large class of the citizens.

But let us avail ourselves of one other lesson before leaving Athens and returning to our own country; let us bear in mind that when the public corruption, produced by indiscriminate abuse of the public functionaries, attains its climax, or rather its lowest depth, it is not the bad men, but the best men, those

* "When he asked the people 'Whether they thought he had expended too much?' they answered in the affirmative; but when he remarked, 'Then be it charged to my account, not yours; only let the new edifices be inscribed with my name, not that of the people of Athens,' they cried out that he might spend as much as he pleased of the public treasures without sparing them in the least."—Plutarch *in vita*.

who have deserved most from their country, that are most likely to suffer. In illustration of this we need only mention three names —Themistocles, Alcibiades, and Aristides, each of whom was ostracised by the degenerate Athenians.

There is nothing a people are more unwilling to admit than their degeneracy, nor is their anything more difficult for them to recognise, especially when it is produced by corrupting influences, which, though fatally efficient, are more or less slow in their operation. But, assuming for a moment that this mutual defamation on the part of our political parties has not a tendency to corrupt the public mind in general, it requires but little reflection to see that, altogether independently of such corruption, it is highly injurious to us as a nation.

It were easy to illustrate this, but a remark or two will be sufficient for our present purpose. Thus, for example, to commence with our National Government—without showing the least favor to one party or the other—so much have General Grant, and almost every member of his cabinet, been abused by partisan politicians in Congress, in our state legislatures, and in the newspapers, that foreign governments hesitate as to whether the most important recommendations of the President of the United States, in his Message to Congress, should receive any attention. Thus, while we write, the Atlantic telegraph brings us word that those "recommendations" are regarded throughout Europe as "still-born," the London Times declaring, in an elaborate editorial, that the recent message, and the documents which accompany it, "mark another stage of the president's *downward career*, and show how far the highest authorities will go when the balance of parties is unstable."

This is comparatively mild in expression, but it means much more than the language would imply to most readers, for no doubt it is semi-official and consequently diplomatic. Were it not for the views on which it is based, the Alabama claims would have been settled long since. England is quite aware of the immense power of this country, but she believes

that we are so much divided by party strife that we could never agree on any such important step as enforcing our claims against so formidable a power as she. This feeling is no secret; it is constantly finding expression in one form or other in the leading journals of the kingdom. Nor can we blame England for it; we should rather blame our politicians and their organs, since it is they who furnish her the data from which she deduces her conclusions.

Nay, the truth is that had England regarded the North as really united against the South at the commencement of the rebellion, she would not have been so ready to accord belligerent rights to the rebels, and then there would have been no room for the Alabama claims or any such. But what wonder is it that she believed there would be no serious, persistent resistance to the secession of the South, since it was loudly declared by leading republican as well as democratic organs in the North that we had no right to detain the Southerners if they wished to separate from us?

Our readers may remember that this was the cause of much strife, not only between the democratic and the republican organs, but between the latter among themselves. It is not strange that this strife deceived England; she afterwards acknowledged the fact, but it was then too late; the mischief was already done. There is no reason why we should not admit that, when she found that after all the North was really in earnest—fully determined to force the South back—she modified her course very much in regard to the latter. Had it not been for this change in her conduct, war between this country and England would have been inevitable. This would have been a calamity to both nations; but in the embarrassing circumstances in which we were placed at the time, especially in regard to our navy, while the navy of England was all-powerful, it would have been a much greater calamity to us than to her, even if it had failed to enable the South to dismember the republic. That we had a narrow escape from being plunged into a war with England is generally admitted

by all our thinking, dispassionate men, and the same class are equally unanimous in the opinion that, whatever trouble we had with England—whatever injury she did us by awarding belligerent rights to the rebels and furnishing them with munitions of war—and it was no trifling injury—it was undoubtedly brought upon us by the violent and unscrupulous partisanship of our politicians and their organs.

But still more fierce and violent did this partisan strife become after the rebellion was over, until it culminated in the impeachment of the President. All remember the deplorable scenes that led to this event, and that characterised the proceedings from day to day to their close. At home those scenes seemed little more than ordinary; so familiar had the gravest accusations and the grossest abuse of the highest functionaries of government become to our people. Throughout Europe it was different. In Germany and France, as well as in England, it was believed that we had fallen into a state of complete anarchy; those of our readers who happened to be in Europe at the time may well remember that it was generally concluded that the disruption of the republic, which the Southerners had proved unable to accomplish, with all their heroism and resolution, by force of arms, was now in a fair way of being accomplished by strife.

There were European statesmen, historians, and philosophers, who—although they never lost faith in the ability of the North to maintain the Union in its integrity, even when our prospects seemed most gloomy—now shook their heads, spoke of the demoralization produced by war, and declared that the house so divided against itself must fall. That our credit fell very much none can forget. During the impeachment trial our bonds became almost a drug in every capital in Europe.

One leading European journal asks, "What stability can be expected in a country where candidates for office are lauded to the skies as combining all the moral virtues; and

where the same men, when in office, are denounced by the very people who had so triumphantly elected them, as the vilest scoundrels?" Another scornfully remarks: "Such is republicanism! Let us hope that such disgraceful scenes, if they do not cause the early downfall of the 'model Republic,' will at least render our demagogues at home more harmless." A third asks, "What sort of a person must this Johnson have been before he was elected? Can it be true that he once belonged to a band of robbers who infested the woods of Tennessee? How strange that a people who claim to possess such superior intelligence would elect such a man! But it seems that every member of this Johnson's cabinet is as great a reprobate as himself!" A fourth, in discussing the same subject, wants to know, "Can these be the same men that belonged to the cabinet of Lincoln during the war? At least the names are the same—Seward, McCulloch, Welles, etc. But if they were so faithful and reliable during the war, how can they have become so base all at once, after peace has been restored?"

It is not alone in England criticisms and predictions like these were made. The leading journals of Germany, France, and Italy were equally free in the expression of their astonishment, their forebodings, their pity, their scorn, their regret, or their exultation, according as they were friendly, unfriendly, or indifferent to republicanism. Even the Russians, whom, strangely enough, so large a proportion of our people regard as our best friends, had their gibe, their sneer, and their prophecy at our expense. We well remember reading in the "Journal de St. Petersburg," the chief organ of the Russian government, the following words: "If we are to believe their organs, the people of the United States distinguish themselves above all other peoples that make any pretension to civilization, by placing their basest and worst men at the head of their government!"

In this hasty glance we have given but a faint idea of the injury inflicted on our material interests as well as on our

reputation as a nation, by violent and unscrupulous party strife. Now, if we inquire what is the effect of the same system on our state and municipal governments, we shall find that it is scarcely less injurious to us at home or abroad.

Because neither the power nor the emoluments possessed by the functionaries of our state governments are such as to excite so much envy or jealousy as those possessed by the chief functionaries of the national government, the former enjoy comparative immunity from accusation and abuse. Accordingly, the remark has often been made abroad, that our state officers must be tolerably respectable men, and those not sufficiently acquainted with the facts wonder why we are so short-sighted as to choose more honest or abler men for our state governments than for the national government. Thus, for example, Mr. Hoffman, the governor of the state of New York, is but little and seldom abused as such; indeed he is scarcely abused at all, except when he refuses to pardon some malefactor, who evidently deserves the punishment awarded to him by the courts, or when he does pardon one whose guilt is not so obvious. But let him be made President, or even secretary of state, or secretary of the treasury, and see how many grave faults he will be soon found to have! nay, let him only become a candidate for any of these offices, especially for the highest of them, and he is no longer that tolerably honest, respectable functionary which even his opponents acknowledge him to be, while he is merely "His Excellency the Governor" and stays at Albany.*

In most of our municipal governments similar causes produce similar results. It need hardly be said that in proportion as cities are large and wealthy their chief public offices are coveted; and in proportion as they are coveted will those who occupy them excite jealousy. The theory, that because one city is so far orderly as to attract no particular attention to its government, another city of about equal size and belong-

* "Those who are themselves unhonored, while they see others honored, *will be ready for any disturbance.*"— Aristotle's *Politics*, b. v, chap. iii.

ing to the same country should be the same, has always been found erroneous when put to the test. Cities inhabited by exactly the same race often require plans of government entirely different from each other, although all may be republican. This was as forcibly illustrated in Italy during the republics of the middle ages as it was in Greece during the time of Pericles. No three cities were more unlike in their government than Venice, Florence, and Genoa. Each exhibited great crimes as well as great virtues, in proportion as it was great and flourishing itself. Genoa being the smallest and least important of the three cities, always boasted how superior it was in its morality to either, especially to Venice, which had no rival in the world at this time in enterprise, wealth, and power. Upon the other hand, Florence admitted that it had more criminals in its prisons than Genoa, but boasted that it had fifty per cent. fewer than Venice, and added, that if all the Venitians who deserved to be in prison had been put there, the difference in her favor would have been more than a hundred per cent. At the same time all the smaller cities thanked God that they were not such a wicked and depraved people as either the Venitians, the Florentines, or the Genoese![o]

Now, in comparing New York to other American cities, it is necessary to bear in mind, not only all this, but a good deal more. In order that such a comparison can have any claim to fairness, New York must be regarded not only as the largest and most wealthy city in the United States, but also as the most heterogeneous in its population, and there is no respectable writer on the science of government who does not admit that this mixture of nationalities presents great difficulties to the government, even when each ingredient possesses a certain amount of intelligence.

It is true that in other cities also there is an ethnological mixture; this is true of Boston and Philadelphia, but not to one-twentieth the extent, in either case, to which

[o] Sismondi's *Hist. des Républiques italiennes*, tome ii, p. 58 *et seq.*

it is true of New York. Thus, then, nearly if not all the causes which render a community difficult to be governed are in full operation in our commercial metropolis. The difference between it and Boston, as to the difficulty of governing it, is nearly as great as that between the armies of Hanibal, which were composed of a dozen nationalities, and the armies of Marcellus, the two-thirds of which, at least, were Italians; the remaining one-third consisting of Gauls and Germans. Then in the armies of Hanibal all the nationalities were on an equal footing, the individual members being equally entitled to promotion, according as they distinguished themselves, whereas the Gauls and Germans in the armies of Marcellus were, in general, treated as aliens; as aliens they were kept under severe restrictions, and were but rarely promoted, scarcely ever to any higher rank than that of a petty officer, corresponding with the corporal or the sergeant of the present day.

Now, it is easy to understand that the armies of Marcellus were much more orderly, and committed fewer excesses than the armies of Hanibal; and if we suppose New York to represent the latter, and Boston the former, we shall be the better able to estimate the superior morality claimed by Boston at its proper value, especially if we take into account, as we should, that Boston has the additional advantage—a greater advantage than any other—of possessing more general intelligence than New York. It follows, then, that a set of men who might govern Boston quite creditably might bring much discredit on themselves did they receive an opportunity of attempting to govern New York. We can assure them that before very long they, too, would be called "the ring." After a probation of a few months each would receive a name deemed more or less appropriate, according as he made himself more or less prominent at the City Hall or elsewhere; one might expect to be decorated with the title of robber, another with that of plunderer, another with that of ignoramus, another with that of traitor, another with that of rebel, etc., etc.

Most probably the first attack would be made on the indi-

vidual having charge of the public treasure. If so he could hardly do anything more straightforward or manly than to request those having the most treasure themselves, and the most unsullied reputation for honesty, without regard to their politics, to examine his coffers and his accounts; but should they even exonerate him to the fullest extent,* he might not hope that his accusers would remain altogether silent.

The next in order would probably be the one having charge of the public works, because, being entrusted with the outlay of so much money, and having the privilege of employing so large a number of voters at the public expense, it clearly follows that he must be guilty of fraudulent and corrupt practices! especially if he be rich and public-spirited enough to advance sufficient money out of his private purse to secure us a sufficient supply of pure Croton against all contingencies. At best, he must not expect anything better for his pains than jeers and jibes!

We think we hear our Boston friends say, "But our Judiciary—that, at least, would remain immaculate, even in New York." Now, we have a high opinion of the judiciary of Boston; we make no accusation whatever against it; nor have we ever done so; but we are convinced that if the two cities exchanged their judges to-morrow, assuming they could do so, in a short time our Boston judges would have as bad a name as ever our own judges had, and we are equally convinced that the most intelligent of the Bostonians, too, would soon begin to say to each other, "It is evident, after all, that those New York judges were wronged. We have had them now for so long, and there has hardly been an instance in which they can be said to have discharged their functions otherwise than in an impartial and honest manner." There might be a a few exceptions; for, indeed, there are some of our judges whom we could not reccommend to the most benighted village

* "We have come to the conclusion," say Messrs. Moses Taylor, E. D. Brown, John Jacob Astor, George K. Sistere, etc., "and certify that the financial affairs of the city, under the charge of the Comptroller, are administered in a correct and faithful manner." *Report*, dated Nov. 1, 1870.

in our western country; but these do not belong to our higher courts,* and it is not fair that the latter should be held responsible for their conduct.

That all branches of our government—national, state and municipal—should be freely criticised, far be it from us to deny. It will be admitted that none have criticised each more fully and more fearlessly than we have ourselves; but we have never criticised any one, no matter what office, high or low, he held—on account of his political opinions. However, it is not against criticism that we speak. If all the republican politicians in the country, or all the democratic politicians be criticised, and even criticised as such, we have no fault to find, for the very term presupposes reason and justice. What we object to is abuse—indiscriminate defamatory abuse of any set of men whatever—merely because they do not belong to our party, because they differ with us in opinion, and because they either possess, or seek power which we prefer to see in the hands of our own party. If it be replied that nothing more than legitimate criticism is intended, then the question arises, is it legitimate criticism to call a man a liar, a knave, a traitor, or a ruffian? Or is it abuse?† Whether is he, who does so, a satirist or a scold?—a Juvenal or a Mrs. Jenkins?

If the effect were confined to the individuals abused and vilified, we should give ourselves no trouble about it, but we have already shown that the practice exposes us to derision and contempt abroad, and exercises a demoralizing influence on our people of all parties at home.‡ There is no American who

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* "I am inclined to believe this practice of the American courts [uniting the trial of the law with the trial of the individual] to be at once most favorable to liberty *and to public order*."—De Tocqueville's *Democracy in America*, vol. i, p. 129.

† "Intending to correct the licentiousness of the press, and to *restore the use of orderly language*, you first try the offender by a jury; but if the jury acquits him, the opinion which was that of a single individual becomes the opinion of the whole country."—*Ibid*, vol. i, p. 231.

‡ "Le principe de la démocratie se corrompt, non seulement lorsqu'on perd l'esprit d'égalite, mais encore quand on prend *l'esprit d'égalité extrême*, et que chacun veut être *égal à ceux qu'il choisit pour lui commander*. Pour

has travelled to any extent in Europe, who has not been informed, in one form or another, that there is no such thing as justice to be expected in the United States, that American law is but a mockery, and that how could it be otherwise, since our highest functionaries are bent only on plundering all they can as long as they are in office; while the judges of our highest courts fraternize with the commonest and basest malefactors, and aid them in evading the just punishment of their crimes. If this is, as it should be, indignantly denied, one partisan American journal after another is exhibited in proof of all; and if this is not sufficient, our partisan religious journals are brought in to settle the dispute. We may remark, in passing, that this serves to explain how it is that our partisan journals, both republican and democratic, are in high favor with all European statesmen and politicians, who are avowedly hostile to republican institutions, whereas even those Americans who recognise them as their organs and quote them as authorities when at home, thrust them aside in their travels on account of the use thus made of them. The same practice is undoubtedly one of the reasons why fifty travelling Americans have the Herald with them wherever they go for one who has any of the partisan journals, whether religious or irreligious, while those hostile to republican institutions are rather diposed to run it down.

That politicians will have organs, we are aware; they could hardly exist without them at the present day; and there are some of the organs which perhaps would find it difficult to exist without the politicians. By all means, then, let both continue to live, but let them improve their manners; let them advise each other, at least to use some discrimination and pay some

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l rs le peuple, ne pouvant souffrir le pouvoir même qu'il confie, *veut tout faire* par lui-même, *délibérer pour le sénat, exécuter pour les magistrats, et dépouiller tous les juges.*

"Il ne peut plus y avoir de vertu dans la république. Le peuple veut faire *les fonctions des magistrats: on ne les respecte donc plus.*"—Montesquieu's *De L'Esprit des Lois*, liv viii, chap. ii.

attention to decency in their attacks on their opponents.* Both should remember that one may be a republican, or a democrat, as the case may be, and an office-holder withal, and yet be neither a plunderer, an embezzler, a traitor, a villain, or a liar. They should remember that of all kinds of argument abuse is the worst—the least convincing, as well as the most vulgar and most demoralizing. Besides it really makes its object feel less than the language of moderation and decency, for what the poet means when he tells us that the razor never cuts so keenly as when dipped in oil is strictly true; it is also true that this oil may become vitriol in its corrosive effect, whereas such arguments as "traitor," "villain," "liar," etc., seldom fail to recoil with a vengeance on those who use them.

Every intelligent person who has learned to think for himself will agree with us that the proper course for our politicians and their organs to pursue is something like this: If the President of the United States is believed to have done wrong, let him be criticised freely; but in the language of decency and with some regard for the high office he holds; let him not be treated as if he were only the president of the "Butcher's Protective Association." There is no need that all his cabinet should be criticised at the same time that he is. Still less is it required that all the officials he has appointed during the last six months should be condemned individually or collectively. If the secretary of the treasury is ignorant of political economy, let his ignorance be pointed out by all means; if his grammar be defective, let him be corrected in that also, but without making any onslaught on the secretary of state, the secretary of war, and the secretary of the navy. Nay, if the secretary of the treasury improves in his political economy, or in his grammar, or in both, after having been so criticised, there is no good reason why the fact should not be acknowledged,

* "L'incivilité n'est pas un vice de l'âme; elle est *l'effet de plusieurs vices*, de *la sotte vanité*, *de l'ignorance de ses devoirs*, de la *paresse*, de la *stupidité*, de la distraction, du mépris des autres, de la jalousie."—La Bruyère's *De l'Homme*, chap xi, liv. iv, c. v.

at least tacitly, by the critic; and, it might be added, although the remark would be likely to displease both, that if the secretary's ideas be still rather crude, those of the assistant treasurer are enlightened and sound.

If it be said that some of the functionaries in the civil service of the United States in New York are sadly incompetent for their positions, let it be admitted that the heads of our different military and naval bureaux, especially the former, are, on the contrary, highly competent and as honest and trustworthy as they are competent; and the fact—for such it really is—will show that if the President is but an indifferent judge of the capacities and characters of politicians, he is rarely mistaken as to the merits of the gentlemen of the sword.

Upon the other hand, if the republicans think that the head or foot of any of our commissions in New York has done wrong, let them criticise him to their heart's content; but there is no need that they should attack all other commissioners belonging to the same party. This rather weakens the force of the castigation inflicted on the actual transgressor. If a leading member of any of the different boards be a "villain" because he has not pleased somebody, or because, if you will, he has deserved the title, that is no reason why all other members should be villains; still less is it a reason why Mayor Hall should be called a villain, especially as there are few men of any party more free from grave faults. If somebody in the Board of Public Works has committed a mortal sin by furnishing an undue supply of Croton, and thereby, perhaps, increasing the number of suicides, surely his sin ought not to extend to the democrats of the Board of Health or of the Police Board, each of whom, we believe, are regarded by our citizens in general as rather good sort of men.

In short, this idea of "the ring" is puerile. The cabinet of every nation in the world may be called a ring, if the term means that the members of the cabinet have formed certain resolutions in common, and that what is recommended by the Premier or head of the cabinet will receive the support of the

rest of the members in preference to anything recommended from the outside. Be this as it may, we have, ourselves, criticised several members of the ring in turn, from time to time, according as we thought they deserved it; such for example, as the late democratic president of the Croton Board, the late street commissioner, and one or two other functionaries, who notoriously neglected their duties.

Nor shall we shrink from pursuing the same course in the future. We have our eye at this moment on certain "members" whose chief qualifications for high official position are impudence, pretension, and arrogance; members who, while they assume the airs of statesmen and lawgivers, know about as much of the science of government, the science of law, or any other science—save that of making money, and thrusting their friends where they can make it also—as the famous "Colonel" Fisk, Jr., knows about military science. But the individuals alluded to are possessed of a certain cunning, and display a *quasi* liberality, which secure them comparative immunity from attack when they deserve it most, while their more frank and straightforward colleagues receive most abuse when they discharge their duties most faithfully.

Thus let the individuals of all parties be treated as they deserve. The Christian dispensation does not require that the sins of the children be visited on the fathers. All our parties are in reality no worse than the parties of other countries; indeed, upon the whole, they are quite as good if not better. But their violent abuse of each other makes them seem much worse to the world as well as to themselves.* Besides the consequences already mentioned, many others, equally deplorable, result from this excessive, violent strife. It is on account of it that our greatest statesmen, whether republican, whig, or democratic, could never hope to attain

* "And this in general ought not to be forgotten, that whosoever has been the real occasion of a state being comfortable or powerful, whether private persons or magistrates, a tribe or any part of the citizens or the multitude, be they who they will, they become a cause of dispute in the state."—Aristotle's *Politics*, b. v, c. iv.

more than a subordinate position in the national government. Neither Clay, nor Webster, nor Cass found it possible to become President; and we believe that neither Sumner nor Seymour could be elected to-day, because they are too much above the common herd of politicians both in culture and intellectual ability.

In conclusion we will mention one other result, which perhaps all our readers have not traced to the same source, *i.e.*, the political freaks of the ladies during the last decade. A great many still continue to blame the ladies for unsexing themselves, but as we have demonstrated on former occasions in this journal,* they are not half as much to blame as their male friends the politicians, scribes, pharisees, etc. It is but justice to the sex to admit that women are much more truthful than men; they have also more faith in what they hear. Then they see and hear it represented in language far too plain to be misunderstood, that all our male functionaries are villains, embezzlers, liars, plunderers, etc., etc.

Is it any wonder therefore that the women think that the only hope of salvation for the country is, that they leave the domestic affairs—including the cooking and baby nursing—to the men, and undertake, first to purify the corrupt ballot-box, which invests with authority so many vicious bad men, and then see that at least a respectable portion of the public offices are occupied by their own more scrupulous, more faithful, and less quarrelsome sex!

* Vide N. Q. R. No. XXXIX., Art. "Woman's Rights Viewed Physiologically and Historically."

NOTICES AND CRITICISMS.

EDUCATION.

Grammatical Analysis, with Progressive Exercises. By WALTER SCOTT DALGLEISH, M.A., Edinburgh, Vice-Principal of Dreghorn College; Author of "*English Composition in Prose and Verse.*" With Preface to American Edition. By Prof. A. H. DUNDON, *Professor of History and Political Economy in New York Evening High School, and Principal of Grammar School No. 4, Jersey City.* 16mo., pp. 66. New York: Charles Scribner & Co. 1870.

WE give the title and its adjuncts in full, in order that the reader may be in a proper frame of mind, at the outset, to appreciate the boon presented to the educators and rising generation of America. Let it first be remarked, that the original author belongs, or did belong at some time, to Edinburg; that he has the letters "A.M." affixed to his name; that he is supposed to be, or was, "Vice-Principal of Dreghorn College." To be all this without being an unrivalled grammarian were perhaps impossible, although there are not many five miles distant from the institution that have ever heard of "Dreghorn College," or that can tell how much better, or worse, it is than five hundred of our own self-styled colleges.

Be this as it may, our Scottish friends often laugh at some of our publishers for their skill in finding mares' nests exactly of this kind; for that shrewd people understand perfectly that one may be a "vice-principal," or professor, even, of one of their universities or colleges, recognised as such, and yet possess but a very slender stock of knowledge. Doubtless, most of our readers remember Burns' description of the election of the "Dean of the Faculty," the individual supposed to be the chief pundit of the university; but as there may be some who forget it, we will extract a *morceau* or two. First we receive an inkling of the great excitement caused by the approaching event:

"But Scot with Scott ne'er met so hot,
Or were more in fury seen, Sir,
Than 'twixt Hal and Bob for the famous job—
Who should be Faculty's Dean, Sir."

This is followed by descriptions of the qualifications of the rival candidates. One possessed sufficient to entitle him to the position he sought in any institution, whereas the chief, if not the only, qualification of the other, was that he remembered the tenth commandment.

"This Hal for genius, wit, and lore,
Among the first was number'd;
But pious Bob, 'mid learning's store,
Commandment ten remember'd.
Yet simple Bob the victory got,
And won his heart's desire;
Which shows that Heaven can boil the pot,
Though the devil's——in the fire."

The impudent candidate in this case was the one who depended on his learning, but whose piety was not of the orthodox standard.

> "Squire Hal besides had, in this case,
> Pretensions rather brassy,
> For talents to deserve a place
> Are qualifications saucy;
> So their worships of the "Faculty,"
> Quite sick of merit's rudeness,
> Chose one who should owe it all, d'ye see,
> To their gratis, grace, and goodness."

To some it may seem incredible that there were more profound scholars and more learned grammarians in Scotland when the above verses were written than there are to day; but such is the fact, nevertheless. By this we do not mean, however, that Scotland has retrograded in general intelligence, for the same remark applies to the scholarship of England and Ireland. But it was in the palmiest days of the Scottish universities that Dr. Johnson uttered his famous sarcasm against the University of St. Andrews, that it was "*growing rich by degrees*"—that is, by selling its academic honors.

Far be it from us to insinuate that Mr. Dalgleish has not come honestly by his "A.M.;" and yet we confess that his book is by no means such as we should expect from a really educated man, whether he had any degree or not. We will give our reasons for this in a minute or or two. In the meantime we will turn to the gentleman to whom America is indebted for the introduction of the work into this country; and first we ask the reader to take into consideration all his titles, and allow the learning which they imply its proper weight. Let it be borne in mind, by every teacher and student, that Prof. A. H. Dundon is not only professor of various branches in the New York Evening High School, but also principal of "Grammar School No. 4, Jersey City" Those who attend evening schools are supposed to be more easily pleased with "professors" than those who attend day schools, especially when they have nothing to pay, so that a "vice-principal" in a Jersey day school may rank as high as a "professor of history and political economy" in a New York evening school. But let us proceed to the work before us.

Next to the title page is a dedication to "Thomas Hunter, Esq., Principal of the Evening High School, and of Grammar School No. 35, city of New York." Who will question the value of "Grammatical Analysis" after this? But the titles just transcribed are followed by a euology which casts the Jenkins style far into the shade; it tells us, in capital letters, that "no other educator" "is better *entitled to a people's gratitude* for the thousands of *trained minds* he sends forth from his schools" than the now immortalized Squire Hunter, who, we are further told, is "the student's *true guide*, an *ornament* to his profession, etc." Lest the titles of the author of this fine specimen of the lapidary style, given in full on

the preceding page, should be forgotten, they are here repeated *in extenso*, after his name.

Next we come to "Preface to American Edition." This, we know, will be read with "bated breath." The first paragraph runs thus:

"The introduction of a text-book, *which has met with considerable favor in another country*, and its *adaptation to American use*, can present but little *to gratify literary ambition*. In *such cases*, there is no room for *originality*, and *innovation beyond a certain extent* would be *out of place*. Nevertheless, a service of this kind *might prove* eminently useful, and this consideration has led to *the present undertaking*."

Now, we maintain that in not one of the sentences in this paragraph does the author express what he intends to express; in not one are the members of the sentence in harmony with each other; not one sentence is either grammatically or logically correct. But let us transcribe a sentence or two more:

"At the *present day*, no argument is needed to prove the importance of Grammatical Analysis as an element of instruction. *Fortunately* there is *complete unanimity* on this point, while *differences of the gravest kind* exist regarding the best method to be pursued."

Well, let us admit that "Grammatical Analysis" is a great thing, but why will not our author analyse his own sentences? If he will not, or can not do so, then we cannot wonder that he tells us "differences of the *gravest kind* exist regarding the best method to be pursued." We confess our feeling is that, if there be any worse "method" than that of the author of this preface, alas, for the poor urchins who may be obliged to study it!

In his last paragraph the editor tells us that "the views here expressed are not personal," whatever that may mean. After a remark or two more of kindred character, we are again presented with the author's full titles, which, with his name, occupy four lines as follows:

"A. H. DUNDON,

"*Professor of History and Political Economy in the New York Evening High School and Principal of Grammar School No. 4, Jersey City.*"

So much for the Introduction. Now for the body of the work. Where there is a fellow-feeling there is generally a family resemblance; however, the English of Mr. Dalgleish is, upon the whole, better than that of Mr. Dundon; but there is very little of it. Will it be believed, that at least four-fifths of the whole book consist of extracts chiefly from the poets. Thus, in the nine pages from 54 to 62, both inclusive, there are only one line and a half that are not extracts; these nine pages constitute one of the "Progressive Exercises" which we are promised in the title page.

Now let us see what sort of instruction does our author give when he essays to give any. His plan is, if we understand it, very much like that of the young lady returning from boarding school, who thought it vulgar to say "puss" or "cat," but must have it "that feline quadruped."

The lucidity of our author's language might be inferred from some of the terms which he makes use of for the purpose of making the boys and girls perfect grammarians—such as the following: "alternative co-ordination" (p. 48), "antithetical co-ordination" (p. 49), "apodosis" (p. 37), "appositional complement" (p. 15), "restrictive attributive clause (p. 28), "protasis" (p. 37), etc., etc. But we will subjoin three passages from as many consecutive pages:

"Where two or more clauses are subordinate to the same clause, they are distinguished by numbers placed *before* the letters (algebraic co-efficients), thus: two clauses subordinate to A. are marked $1a^1$, $2a^1$; two or more clauses subordinate to a^1 are marked $1a^2$, $2a^2$, $3a^2$, etc., etc."—(p. 26.

"Two or more subordinate clauses having the same kind of subordination to a superior clause, are said to be *co-ordinate with each other*; as $1a_2$ and $2a^2$, in example to Exercise 9."—(p. 27.)

"Attributive clauses are either (1) *Explanatory* or (2) *Restrictive*. When the attributive clause expresses a universal quality of that which it qualifies, it is termed simply *explanatory*."—(p. 28.)

Now the reader may judge for himself whether we do injustice to author or editor. Is this sort of jargon a suitable vehicle for teaching children the principles of the English language? For our own part we know nothing more unsuitable; nay, we know nothing better calculated to frighten even grown persons from the study of grammar altogether. We do not mean, however, that it is altogether useless, for it has so much amused us that we strongly advise the publishers to include it in their "Library of Wonders"; and as books, like weeds, generally multiply in proportion to their worthlessness, we beg leave to suggest to the editor the following motto, for his next edition, to be inserted in place of some of his titles:

"In prato quondam *rana* conspexit *bovem*,
Et, tacta invidiæ tantæ magnitudinis,
Rugosam inflavit pellem."

Geology: for Teachers, Classes, and Private Students. By SANBORN TENNEY, A.M., Professor of Natural History in Williams College. Illustrated with 255 Engravings, 12mo., pp. 366. Philadelphia: E. H. Buller & Co. 1871.

THERE are few things we like better than an interesting, instructive text book—one capable of expanding as well as enlightening the youthful mind; and such is eminently the character of that now before us. After a careful examination—one from which we have derived both profit and pleasure—we readily admit that the author indulges in no vain-glorious statement when he assures the reader in the preface to his first edition that, "the facts have been drawn from the whole domain of science."*

* Page 4.

This assurance was given eleven years ago; the work has since passed through several editions; and we are informed in the preface to the present edition that "many new illustrations have been added, and the size of the book considerably increased." Much more than this might justly have been said; but the whole new preface comprises only two brief paragraphs. This, however, does not surprise us; for in nine cases out of ten we find that it is those who promise least in their prefaces that give most in their books, and *vice versa*,—a remark which applies with peculiar force to our compilers of text-books.

In no science has more progress been made during the last twenty years than in Geology; and to no science is the enlightened world more indebted for its marvellous revelations. Even astronomy, which embraces the whole universe, has scarcely made more startling discoveries. When we speak of the Science of the Heavens and the Science of the Earth, there is a contrast in the very terms in favor of the former; and yet it must be admitted, on reflection, that geology has shed more light on its sister sciences, and contributed more to illustrate both sacred and profane history, within the period mentioned, than astronomy. In a word, it has made more curious and important, if not more sublime, additions to the general stock of human knowledge.

To show how this has been done is not the object of Prof. Tenney's book; otherwise he would have required many octavos instead of our slender duodecimo. It is not the various processes by which nature has been interrogated he presents the student, but their results. At the same time the facts are abundantly explained—as fully, indeed, as it would be judicious to explain them in a text-book designed for colleges as well as schools. Yet it does not presuppose a knowledge of any of the subjects of which it treats, although those subjects are quite numerous, for the work takes a wider range than almost any other bearing the same title with which we are acquainted. In illustration of this, we may refer to the many curious and interesting facts which it has drawn from the animal and vegetable kingdom, as well as to its brief but graphic descriptions of all the common minerals, including the metals, precious stones, etc. None, who have devoted any thoughtful attention to geology, need be informed that the knowledge gleaned from these sources is a necessary qualification for those who would intelligently search the rocks for those remains of plants and animals from which such valuable lessons are to be learned.

In no text-book have we found a more excellent classification of the rock formations; for it is at once simple, impressive, and interesting. The rocks are divided into ten systems, each being the work of countless ages—at least two of those immense periods having passed away before man made his appearance on the earth. The first period had passed away before any living thing had existed on our globe; and it is

the opinion of most geologists that this period alone was vastly longer than the four thousand years interpreted to be the Scripture estimate of its whole age. "During the Azoic Age," says Prof. Tenney, "after the first crust of the Earth was formed, the ocean covered the entire, or almost the entire globe, and in this ocean, which was probably hot, most, if not all, the Azoic rocks which we are permitted to observe were formed" (p. 145). In a word, more thousands of centuries have passed since this period—since terrestrial life, even of the lowest kind, commenced—than the human mind is capable of conceiving.

But in this department we must not expand our remarks; and yet we cannot lay aside "Tenney's Geology" without inviting the attention of the general reader—altogether apart from schools and teachers—to the chapters on "geological changes now going on, and the agencies by which they are produced." This will be found worth studying by all save those who are geologists themselves to a greater or less extent; and it is not for the latter class these observations are intended. The work is illustrated with over two hundred and fifty engravings; it has also the advantage of an etymological and pronouncing glossary, and a copious index.

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1. *An Elementary Grammar of the German Language;* with Exercises, Readings, Conversations, Paradigms, and a Vocabulary. By JAMES H. WORMAN, A.M. 12mo., pp. 297. New York: A. S. Barnes & Co. 1870.

2. *A Complete Grammar of the German Language;* with Exercises, etc., etc. Large 12mo., pp. 591. New York: A. S. Barnes & Co. 1870.

3. *Berliner Echo. The German Echo; or, Dialogues to teach German Conversation.* With an adequate Vocabulary. Edited, for the use of American students, by JAMES H. WORMAN, A.M. 12mo., pp. 203.

4. *Collegiate German Reader,* in Prose and Verse, with Biographical Notices, etc., etc. By JAMES H. WORMAN, A.M., assisted by ALVIN PUTZKER. 12mo., pp. 380. New York: A. S. Barnes & Co. 1870.

AMONG the literatures of the present day, that of Germany is one of the richest. It is true, that it it is neither so extensive nor so attractive as English or French literature; it is not so cosmopolitan as either, and, therefore, does not exercise so much influence on European civilization, notwithstanding the superior, profound learning—especially in comparative philology—which it embodies; but none will deny that it is sufficiently important to render it worth the student's while to study its language.

This is no new proposition of ours; nor is it in the least influenced by the triumph of the Germans during the war which, unhappily, is still

raging. Had the Germans been overpowered, and their chief towns and strongholds been captured now, as they formerly were, we should have urged the study of their language and literature just as earnestly and as confidently as we do while the fortune of war seems to favor them so much. We should have thought of them in their adversity as we now do of the French, who, though not only their fair capital, but all their other important cities, were captured to-morrow, would nevertheless soon recover their prestige as a highly cultivated, ingenious, and enlightened nation—a nation whose literature would always be a source of instruction and entertainment, even to their enemies.

Of all the principal languages of Europe the German is the most difficult to learn; that it is by no means a euphonious language is admitted by the most popular German writers, as well as by the most eminent German critics; while it is generally agreed among foreigners that it has more hissing, guttural sounds than almost any other cultivated dialect.

Those who undertake to learn it experience great difficulties from its declensions and genders. This will not seem strange when it is remembered that the most learned German grammarians differ with each other on these points. Some maintain that it has *eight* declensions; others that it has but *six*. One class reduce the number to *five*, another to *four;* while yet another claim that there are but *two!* Otto, acting somewhat on the principle of "splitting the difference," holds that, while two declensions may do very well for Germans, foreigners require *five*. The author of the grammars before us thinks the latter number one too many; accordingly he has *four* declensions, just half as many as Adelung, and twice as many as Woodberry and a number of others.*

The gender is another serious obstacle to foreigners; it is sufficiently puzzling even to natives; for no other cultivated language has a gender so replete with inconsistencies. In order that those of our readers unacquainted with German may understand this, we will give a few examples: the German equivalent for *masculine* is "männliche" (*man-like*), for *feminine*, "weibliche" (*woman-like*,) for *neuter*, "sachliche" (*thing-like*); yet *das weib* (the woman) is neuter; *das Madchen* (the maid, or maiden) is neuter; *das Frauenzimmer* (the female person) is neuter. Upon the other hand, *die Sonne* (the sun) is feminine, *der Mond* (the moon) masculine; *die Eiche* (the oak) feminine; *der Flieder* (the lilac) masculine; *die Kartoffel* (the potato) feminine. Again, *die Donau* (the Danube) is feminine, *der Rhein* (the Rhine) masculine, *die Elbe* (the Elba) feminine, *der la Plata* (the La Plata) masculine, *die Spree* (the Spree) feminine, *der Ohio* (the Ohio) masculine, etc., etc. Thus, then, woman or maid is "*thing*-like" in German, as each is neuter; the potato and the oak are "*woman*-like," since they are both feminine; the moon is "*man*-like," and the sun "*woman*-like," the former being masculine and the latter feminine.

* See *Woman's Complete German Grammar*, p. 40

We might multiply similar examples in each gender, but these will suffice. None, we trust, will suppose that our object in pointing out such inconsistencies is to discourage the study of the language; were we even so disposed we need give ourselves no trouble on that point. Unfortunately, the language is but too discouraging in itself; hence it is that it has made so little progress among foreigners. This has been somewhat curiously illustrated during the Austrian domination in Italy. The efforts made by the imperial government to create a taste for the German language among the higher classes of the Italians might well seem incredible were they not attested in a hundred forms by official reports and statistics. German schools and German seminaries were established at great expense in all parts of Lombardy and Venice; but even the children of those Italians holding office under the government could seldom be induced to be regular in their attendance. After the school system had utterly failed, the Grand Duke Maximilian, the late ill-fated Emperor of Mexico, who, on account of his amiable manners, was more popular in Venice than any other Austrian official, hit upon the expedient of introducing female teachers. Accordingly scores of beautiful, highly-educated Tyrolese maidens were sent to Venice for that purpose. For some time there seemed every prospect of success; but at the end of one year it was found that, although some had learned a smattering of German from the pretty Tyrolese, the large majority of the latter had almost discarded the language they had come to teach and disseminate, and adopted that of their pupils, who, in return, not unfrequently adopted their teachers as wives. The latter fact is but one of the many that could be adduced to show that it is not against the German people the prejudice exists, but against their language.

The German is undoutedly not so refined or elegant a language as any of the other principal dialects of Europe, not excepting the English; each of the latter owes a great deal to the Latin and the Greek, while the former owes very little to either. The German is more monosyllabic than any other European language having an extensive literature; and in proportion as a language is monosyllabic it is wanting in dignity, because even the most uncommon monosyllabes are apt to get into the mouths of the common people.

We are quite aware that in no book will the reader find longer words or more long words than in a German book, but if these seeming polysyllables be examined, it will be found, in nine cases out of ten, that they consist of several monosyllables, of entirely different significations, joined together. This is true even of technical terms; nor need we go beyond those used in grammar for an illustration. Thus take the ten German parts of speech and it will be seen that each ends with *wort* (word); article is *geschlechtwort* (sexword); substantive, *hauptwort* (headword); pronoun, *forwort* (forword); numeral, *zahlwort* (numberword)

verb, *zeitwort* (timeword); preposition, *vorwort* (beforeword), etc., etc. Turning to the conjugation of the verb we find that what, in English, we call the *auxiliary verb* is in German *hülfszeitwort*, one term in appearance, but in reality consisting of *hülfe* (help); *zeit* (time), and *wort* (word).

But what we want to show, in the present instance, is that a good German grammar is of much more importance to those desirous of learning that language than might be supposed by those acquainted only with the English grammar; or with the English in connection with the Greek or the Latin. In our opinion there is no language in the study of which more depends on the grammar than the German; nor do we speak on the subject without the experience—chequered though it has been—of many years in our attempts to understand Gothe and Schiller and Schlegel in the original. Accordingly we have taken the pains to examine Worman's grammar pretty carefully. We have found defects in each—perhaps more than in other grammars to which we have devoted equal attention; but we have also found more merits. Indeed, the whole series now before us pleases us better than any similar series published in this country that we have seen.

It is for his system, however, much more than for his grammatical knowledge or accuracy, that we commend Mr. Worman. The fundamental principles of grammar being the same in all languages, a few mistakes made here and there, in presenting those principles, are of but little importance when the general plan is good; and the plan of Worman is excellent. In our opinion it is superior, at least in some important features, to Ollendorff's. The system of the latter is too fragmentary; it requires too much from both pupil and teacher.

In Ollendorff we have one tense of the verb, or one declension of the noun, in one page; then several pages often intervene before we find another tense or another declension; and here, also, we have but a fragment. One tense or declension is confounded with another, and the genders are often confounded in a similar manner. The reason assigned for this seems plausible at first sight, namely, that tenses, cases, genders, and all are introduced, as in conversation, according as needed. But no language can be taught from books without a gradual development of its principles; as well might a music teacher attempt to teach music without the gamut, telling his pupils that they must learn the notes according as they occur in the songs or tunes on which they are required to practise.

Mr. Worman, recognising this fact, gives a complete exhibition of each new form he introduces, whether it be the declensions of the article or the noun, or the tenses and numbers of the verb. Ollendorff's exercises in the language of the pupil are much too long and too numerous, while the exercises in the language sought to be learned or taught are too brief and too few. This difficulty is also obviated by Mr. Worman,

who introduces exercises for German conversation and German reading at the very outset, even in his "Elementary Grammar," each exercise in the original being accompanied with a vocabulary. As the pupil is liable to forget some words in the vocabulary of a previous lesson or exercise, two general alphabetical vocabularies are given at the end of the grammar—one German and English, the other English and German. By these various means the study of the language is greatly facilitated, and many things which would be otherwise discouraging, if not absolutely repulsive, are invested with an interest which, in time, becomes a veritable attraction.

These remarks apply with particular force to the "Complete German Grammar"—a title which we cheerfully admit does not at all overestimate the real merits of the work. It is on the plan of "Gaspey's English Conversation Grammar"—a work become quite famous throughout continental Europe. Whether Worman's Grammar proves equally successful or not, we are convinced that in time it will supersede more than one German grammar now pretty extensively used in this country.

"The German Echo" is what its title implies. It is chiefly a reprint of "Wolfram's German Echo"—a book much better known in England than in this country; its object, as the present editor tells us in his preface, being "to furnish the learner with an extensive vocabulary of words and expressions in common use, etc."

Worman's "German Reader" embraces a well selected variety in prose and verse from both the popular and classical writers of Germany. Among the more celebrated pieces given are Gœthe's *Iphigenie* and Schiller's *Jungfrau von Orleans*. On the title page of this volume the reader is informed that it contains "biographical notices, explanatory notes, etc., etc., and an adequate dictionary;" but, on examination, we find none of these things—nothing but the text, except some proverbs at the end translated into English. This is rather an awkward mistake, although the book is marked on the back "Text only," and the publishers announce at the end of the preface that the missing "Notes and Vocabulary" will be found in a separate publication.

We may now remark that our attention has not been called to this series by either Mr. Worman or his publishers, but by several teachers in different parts of the country, some speaking favorably, some unfavorably of the books—especially of the grammars; each asking whether we did not concur in his views, and if so, whether we would not publish our opinion. There is no reason why we should lean to one side or the other, further than we feel justified by the facts. Of Mr. Worman we know nothing. Some tell us that he is not a German, that he cannot speak the language of which he undertakes to write or compile a grammar for. All this may be true for aught we know or care; for strange though it may appear to some of our readers, if none were to compile

grammars but those who understand the languages which those grammars purport to teach, respectively, we should not have one Greek or Latin grammar for every score, each of which is claimed by its publishers to surpass all others in "excellent features," the author being a celebrated professor in some eastern, western, or southern college or university famous for its superior erudition. If one can become the author of a Latin grammar, for example, while he could not for the life of him read ten lines correctly in an ode of Horace or a satire of Juvenal, without having "practised" on the same, grammar and dictionary in hand, some hours previously, while he could not read one line of the preceding or following part without such preparation, what is there so very horrible in undertaking to compile a German grammar under similar difficulties?

Be this as it may, it is sufficient for us to be satisfied, as we are, that, wherever Mr. Worman was born or educated—whether he can speak or write German or not—the grammars which bear his name are really good works. For the same reason we do not permit ourselves to be influenced by our lack of admiration for Mr. Worman's publishers as such. Sometimes, indeed, the Messrs. Barnes have published excellent books; but at other times they have published books of the opposite character, and our pages will show that, while we have sought to do ample justice to the merits of the former, we have as freely and fully condemned the faults of the latter.

Dr. A. Baskerville's Practisches Lehrbuch der Englischen Sprache, gänzlich umgearbeitet und für den Gebrauch in Amerika eingerichtet, von GUSTAV FISCHER. (*Dr. Baskerville's Practical Text-Book of the English Language, entirely revised and adapted to be used in America.*) By GUSTAVUS FISCHER. 12mo., pp. 318. New York: E. Steiger. 1870.

WE have carefully examined this work and can confidently recommend it to such of our German friends as desire to acquire a thorough, grammatical knowledge of English. The author perfectly understands the genius of our language; he is entirely familiar with its principles, and capable of appreciating its abundant resources; and, what is more, he possesses the rare faculty of communicating, happily and fully, through the medium of the German, even the most difficult part of that language.

Nor does the editor of the American edition prove himself less competent for his task. Some time since we happened to form the acquaintance of Dr. Fischer, and were pleased to find him not only a good

specimen of a German savant, but, also, quite an accomplished English scholar. To these remarks, brief as they necessarily are—the "Lehrbuch" having reached us just as we were closing the last sheet of our present number—we need hardly add, that American students of the German will also derive considerable aid from Dr. Fischer's work.

The Student's Mythology: A Compendium of Greek, Roman, Egyptian, Assyrian, Persian, Hindoo, Chinese, Thibetian, Scandinavian, Celtic, Aztic, and Peruvian Mythologies, in accordance with Standard Authorities. Arranged for the use of Schools and Academies. By C. A. White. 12mo., pp. 315. New York: W. J. Widdelton. 1870.

The title of this work embraces a wide range; it leads the intelligent reader to expect much; but, very differently from what happens, ordinarily, in such cases at the present day, no one will be disappointed on a careful examination of the multifarious contents. For our own part we have, on the contrary, been agreeably surprised after having devoted much more time and attention to the book than to any other recent text-book; and we are convinced that no competent educator who examines it with equal care will wonder that, as we are informed in the preface, it was a favorite, both with teachers and students, even while in manuscript.

"The Student's Mythology has been in use in manuscript for nearly three years, in one of our largest academies, where it has been received with much favor by both teachers and pupils. Even in that form which subjected them to the inconvenience of long dictations, it was preferred to any of the ordinary text-books on the subject. Copies were sought for the use of other institutions, and the principals of the academy referred to consented that the work should be prepared for the press."

Most willingly do we admit that there is not a word of exaggeration in this; for there is no work we recommend with more sincere pleasure than a good text-book; and mythology is a subject of much greater importance than it would seem even to the most intelligent at first sight. Surely it is necessary that we should understand what pervades to a greater or less extent the most valuable part of every literature. It should be remembered that some of the finest passages in the noblest productions of the human mind are utterly unintelligible, or, at least, incapable of being appreciated in their full force and beauty, without a knowledge of mythology.

To this we need only add that the large mass of facts in "The Student's Mythology," drawn from all the great literatures of the world, are admirably arranged. Besides a copious table of contents, in which the classification is faultless, the student has the advantage of a full alphabetical index. A work evincing so much taste and judgment, and such a thorough acquaintance with the *science* of teaching, should be

well gotten up; and we are glad that, far from having any fault to find in this respect, in the present instance, we are quite pleased with the typography, paper, and binding. There is nothing gaudy; on the contrary, a chasteness marks the *tout ensemble*, which is in harmony with the contents of the book.

A Greek Grammar for Beginners. By WILLIAM HENRY WADDELL, Professor of Ancient Languages in the University of Georgia. 16mo., pp. 104. New York: Harper & Brothers. 1870.

THE decided merits of the slender volume which bears this modest title would have received much earlier attention at our hands, but a young friend of ours, who is a devoted student of the Greek, took it from our desk without making us aware of the fact, just as we were wiping our pen to review it. To-day he returns it, but only with the condition that he can borrow it again for at least two months; although he is by no means a "beginner" in Greek, being able to read Homer quite intelligently, with very little aid from the dictionary. We are so much pleased with his judgment as to the extent to which the work facilitates the study of the principles of the most beautiful of human tongues, that we readily comply with his wish.

No superfluous rules or definitions are given to discourage the beginner; nothing but what is essentially necessary to prepare him for the difficulties which in time must come. It is almost superfluous to say that the paradigms are of this character; although many compilers of grammars at the present day seem to regard them as only of secondary importance, for they often compress them into the narrowest space, not only by means of abbreviations which the young student cannot be supposed to understand, but sometimes by the total omission of important parts, especially of the verb.

Professor Waddell gives full paradigms of all the declinable words, giving the verb that particular attention which in Greek, more than any other language, its numerous highly artistic and beautiful inflections require, in order that the various shades of thought they so accurately express may be appreciated by the student.

It is but justice to say that it is not merely by the selection of good Greek grammars and readers that the Messrs. Harper have contributed to lighten the labors of the student and encourage him in their performance; the publication of works like Yonge's English-Greek Lexicon, edited by Dr. Drisler, entitle them to the gratitude of all admirers of the language of Homer and Plato.

HISTORY AND BIOGRAPHY.

History of Engl nd, from the Fall of Wolsey to the Death of Elizabeth. By JAMES ANTHONY FROUDE, M.A. Late Fellow of Exeter College, Oxford. 12 vols. 12mo. New York: Charles Scribner & Co. 1871.

THE American publishers have done their countrymen a great service by placing within the reach of all a work so replete with interest and instruction as this; for Froude's history is already everywhere recognised as ranking with the best historical works of modern times. It is no exaggeration to say that no other embracing only an equal period—little more than half a century—contains so large an amount of multifarious information, a considerable portion of which is of the most important and startling character ever recorded.

Those aware of the indefatigable, scrutinising research of the author, will readily understand this, especially, if they also bear in mind that the age of which Mr. Froude writes is that of Henry VIII., Elizabeth, Mary, Queen of Scots, Luther, Erasmus, Galileo, Shakspeare, Ben Jonson, Tycho Brahe, Bacon, Kepler, etc., and that, far from confining himself to the events which took place in England in one of the most glorious periods of her existence as a nation, he takes a general survey of Europe, carefully recording every great event, no matter where it transpired, that had any bearing, directly or indirectly, on a country which was then, perhaps, more than ever, all-powerful in its influence on the greatest nations in the world. To this remark it is almost superfluous to add that both Scotland and Ireland receive due attention at the hands of Mr. Froude; nor has either country any just reason to reproach him with English prejudice, or any disposition to distort or misrepresent facts for the purpose of either excusing or glorifying England.

The greatest thinkers of England are those who have always been most gentle and friendly in estimating the characteristics of Ireland; nor does Mr. Froude form an exception. He fully corroborates the testimony of Thierry, and other authors, that even those of the English who went to that country with the intention of aiding in subduing and oppressing the people soon became more Irish than the Irish themselves.* If the reader will bear in mind that "an understanding not to be moved" and "good sense" as to British domination were among the chief qualifications required from candidates for office in Ireland, he will be the better able to appreciate the spirit in which Mr. Froude turns his attention to that still unhappy country.

"The Irish difficulty under the Plantagenets, the Tudors, the Stuarts and the Guelphs has preserved one uniform characteristic. The country has exerted a *magical power of transformation* upon every one connected with it. The *hardest* English understanding

* *Histoire de la Conquête de l'Angleterre par les Normands, etc.* Par Augustin Thierry, tome iv, liv. xi.

has *given way* before a few years of residence there; the most *solid* good sense has melted under the influence of its atmosphere."—(Vol. iv, p. 71.)

We can ourselves bear testimony to the remarkable change of feeling which the best class of the English experience and cheerfully acknowledge. But we have not taken up Froude's History at this time for the purpose of reviewing it. Most of our readers are aware of its unquestionable and peculiar merits. The author is as lucid, graphic, and powerful, yet chaste, in style, as he is truthful, impartial, and honest in statement. That before us is what the publishers call the "popular edition." It is printed in good, clear type, and neatly bound in muslin. Besides a copious alphabetical index at the end of the work, a full table of contents is prefixed to each volume.

Presbyterian Reunion: Memorial Volume, 1837-1871. 8vo., pp. 568. New York: De Witt C. Lent & Co. 1870.

In our opinion it were well, not only for religion and morality, but also for civilization, that all the numerous sects into which the Christian world is divided were to reunite, as the Old School and New School of the Presbyterian church have recently done. Since we have always urged the former, we presume we need hardly say that the latter has afforded us pleasure. If peace be desirable even between armies whose business it is to fight, how much more desirable is it between ministers of the gospel, one of whose chief functions it is to preach peace and good-will among mankind! Accordingly, let us hope to see the good example of the Presbyterians soon followed by the broken fragments of other churches, some of which are as much at war with each other as ever the Presbyterian were, either in Europe or America.

This, we fear, may be said with but too much truth of the High Church and Low Church of the Episcopalians; indeed, it may well be doubted whether there existed more bitter strife between the Old Church and the New Church at any time than there is at this moment, and has been for years, between the High Church and the Low Church. Unhappily, there are different other denominations which are similarly divided and at variance with each other; but in this brief notice we need only mention the Methodists and the Baptists, each of whom are divided into at least two rival sects, which, we believe, dislike each other as cordially as any "schools" or "churches," new or old, high or low, have done.

We must all admit that the best example of a united church at the present day is the Catholic church. But an important lesson may be learned by all churches, including the Catholic, from a little attention to the fact that it was not always so. For many centuries, while peace reigned within its bosom, neither the Mohammedans nor the Pagans were able to reproach the Christians with being divided into scores of petty

sects, all of which were more or less at war with each other, while each claimed to be, if not the only true church, at least the only church that was peculiarly favored by God.

But the spirit of dissension entered the Christian church at last, and ever since old churches and new churches, high churches and low churches, have exhibited a ratio of increase as large as the most thriving of Darwin's new species "from natural selection." The Catholic church has profited by this lesson, so that, if we except the Jesuits, who are always more or less belligerent, it can hardly be said to have any disturbing element at the present day. In religion, as well as in politics or war, union is strength, and never was its strength more strikingly illustrated than it is at this moment by the wonderful progress made by the Catholic church in this country; it being an undeniable fact that many of our most enlightened citizens belonging to different Protestant denominations are not only embracing its doctrines, but becoming more zealous Catholics than those born and bred within its pale.

The more reunions we have, then, the better; nor can we have any more appropriate memorials of such to commence with than books like that now before us. The "Memorial Volume" is historical, biographical, and statistical, and it is embellished with portraits of all the ministers of both schools who have been more or less instrumental in restoring the Presbyterian union so long rent in twain.

The Rev. Dr. Miller contributes a record of the Old School from 1837 to the present; the Rev. Dr. Stearns performs a similar work for the New School. The Rev. Dr. Sprague furnishes biographical sketches of the leading ministers of the Old School; the Rev. Dr. Humphrey performing a similar task for the New School; the Rev. Dr. Adams is the historian of the Reunion; the Reconstruction is treated by the Rev. Mr. Plumley, while the Future Church, as it is believed it should be, is sketched in outline by the Rev. Dr. Hall.

When we remark, further, that the appendix contains a large amount of miscellaneous statistics, we think we need hardly add that the "Memorial Volume" will prove interesting, not only to Presbyterians, but, to a greater or less extent, to all those Christian denominations that are willing to profit by the experience even of those whose religious doctrines they regard as erroneous, but of whose intelligence and intellectual abilities there can be no question.

The Evidence for the Papacy, as derived from the Holy Scriptures and from Primitive Antiquity. With an Introductory Epistle by Hon. COLIN LINDSAY. 8vo., pp. 339. London. Longmans, Greene & Co. 1870.

WE are indebted to the courtesy of the London publishers of this work for a copy sent us by mail several months since; but being inter-

esting to scholars, altogether independently of its religious and historical character, on account of the large amount of curious lore it contains, one of that fraternity carried it off before we had time even to glance at it, and it was not until yesterday that we found it back again on our table. The title may imply to many that its object is religious controversy; but were this its character, we should leave it to others to examine, since to contribute as far as we can to reconciliation, and not to excite strife under pretence of serving God, is our unalterable aim. At least we do not regard the book before us as "controversial" in any disagreeable sense. To us "Evidence for the Papacy" seems a theme as purely historical as the antiquity of the Pope's temporal power; and the latter we discussed ourselves nearly four years ago,* showing from the best authorities who discussed the subject from the beginning of the Christian era up to our own time, that if the religious claims of His Holiness were waived altogether, it would still be indisputable that no king or emperor has a better right to his dominions.

Very few, if any, expected four years ago such complications as those which have recently taken place in Europe; whoever takes the trouble, however, to turn to the article alluded to, will see that we regarded it not only as possible, but probable, that the Pope would ere long be deprived of his temporal dominions. But it may also be seen that we reminded our readers that such an occurrence would not be new; that more than once the States of the Church were wrested from the Pope by means of the bayonet and the cannon, but that each time they had to be returned, and that there was no reason why what was accomplished by reason and reflection in the past, after war had ceased its ravages, should not be accomplished in the future.

It was not as a Catholic we spoke then of the Pope's temporal power, nor is it as a Catholic we speak now of the Evidence for the Papacy; at all times we speak as a Protestant, but like one, we trust, who does not allow sectarian feeling to cloud his reason or blunt his sense of justice. We might fairly be accused of the contrary sentiment, however, did we not admit that a large amount of the testimony adduced by Mr. Lindsay in this book is of the highest character.

In his introductory Epistle, which extends to sixty-five pages, the author (who is a convert from the Anglican to the Catholic church) gives his "Reasons for Secession," urges the "Duty of Inquiry," and maintains the infallibility "apostolicity," perpetuity, etc., etc., of the Catholic church. Then he proceeds to prove St. Peter's supremacy partly from the Scriptures and partly by the testimony of the Fathers

* National Quarterly Review for March, 1867, No. XXVI.

(*Consensus Patrum*). A "second inquiry" is devoted to the Papal Supremacy, which is maintained by the same two-fold means.

We confess that it is the numerous quotations from the Primitive Fathers which interest us most. These show but too plainly that many of the bishops and archbishops of more than a dozen centuries ago were much more learned than are some of their reverend and right reverend successors of our boasted nineteenth century. We learn also from those curious citations, though only by implication, that the ancient Fathers were much more father-like to their priests, as well as to their flocks in general, than some of the modern Fathers, although we cheerfully admit that there are prelates among the latter, even in our own republican country, who would compare favorably in learning and liberality of sentiment, as well as in piety, with some of the best of those whose word is now held to be very nearly, if not quite, as good authority as Scripture.

BELLES-LETTRES AND SCIENCE.

Episodes and Lyric Pieces. By ROBERT KELLEY WEEKS. 16mo., pp. 164. New York: Leypoldt & Holt. 1870.

THE famous Arabian naturalist, Aboul Feda, describes an orchard situated near Samarcand, which yielded three kinds of apples, but no other fruit. One of these kinds—called the Ferdusian pippin—was acknowledged by all to be the best in the world; but it grew only in favorable seasons—sometimes not more than once in seven years. During the intervening time the trees which produced it did not even blossom. When the favorable season came, however, there was such a prodigious abundance of the prized apple that it not only supplied the whole surrounding country, but was exported to all parts of the world, and still sufficient was left to enable thrifty dealers to supply at least the wealthy epicures until there was another harvest of the precious fruit.

The second kind was of the crab species. The year the pippin flourished there were scarcely any crabs, but, upon the other hand, the crabs multiplied immensely according as the pippin became scarce. Although the crabs were sour and crude, those having a pretty strong stomach, and not used to the pippin, could eat them very well; nay, some declared them excellent, not only as good as the pippin, but better; but we are told that this class had never tasted the latter fruit.

The third is described as half crab, half horse-chestnut. This species multiplied in a ratio still more wonderful than the crab pure and simple, so that some local naturalists compared its reproductive powers to those of the locust. Whether this was a fair comparison or not, none, save the lowest class—those whose stomachs were of the strongest tex-

ture—could be induced to eat the hybrid fruit; and even this class found it almost impossible to digest it.

We confess that these different kinds of apples remind us forcibly of as many kinds of poets that claim attention and renown at the present day. The pippins have not had a favorable season for some time; but the old are so well preserved that we are yet in no serious need for a new crop. In the meantime the crab and the hybrid grow more and more prolific from year to year; one surpassing the other in productiveness in proportion as it becomes more and more worthless itself.

Now, in which class shall we place the "Episodes and Lyric Pieces?" We dare say that Mr. Weeks himself hardly expects them to be ranked with the Ferdusian pippins, nor shall we be so uncivil as to rank them with the hybrid class: it follows, then, that for the present at least they must take their place among the crabs. If, in the course of our examination—which must necessarily be brief—the reader becomes satisfied that our author is misplaced, we shall have no objection to his being promoted; for, since we know nothing whatever of Mr. Weeks further than we learn from his book, we can hardly be supposed to have any prejudice against him.

Discarding natural history at this point, we think it proper to say that there is nothing particularly sour in the volume before us; but it should be remembered that crabs have other qualities besides their rather disagreeable acidity.

At all events, Mr. Weeks deals much more in sugar than in acid; indeed we think that "Sugar Plums" would have been a more appropriate title for his present book than the one it bears. The term "Episodes" is not properly applied to a series of detached pieces on different subjects; it is proper in regard to poetry, only when applied to passages introduced incidentally into an epic, or other long poem, for the sake of variety or illustration, as the episodes in the Iliad, the Æneid, and Paradise Lost. Aristotle, the best authority on the subject, tells us that the episode is the part of a tragedy intervening between two complete odes of the chorus.* Further on† he tells us that the episode should be suitable to the plot. In speaking of Homer the same great critic gives him the highest praise for the skilful use he makes of episodes in the Iliad, for the purposes of illustration and variety. "But now," he says, "having selected one part of the war he made use of many episodes, *such as the catalogue of the ships, etc.*"‡

But we fear that "Lyric Pieces" are quite as inappropriate in the present instance as "Episodes." At any rate it requires more discrimination than we can pretend to possess to tell which are the Episodes and which are the Lyrics, especially as the titles of particular pieces are in general as inappropriate as the general title of the volume. Thus, for

* *Poetics*, chap. xii. † Chap. xvii. ‡ *Ibid*, chap. xxiii.

example, the first piece is entitled "The Return of Paris;" but, except that it mentions Hector, Ilion, and one or two other classic names, it might as well have been "The Return of Smith."

There are not even a few names to justify the title "In Corinth," which might as well have been "In Kansas," while "In Collatia" might, with at least equal appropriateness, have been "In Utah." We do not want, however, to attach too much importance to titles, but are quite willing to accept the philosophy that "the rose by any other name would smell as sweet." Nay, we do not care how unclassic the title is, if the performance that bears it is classic. Now, let us for a moment judge our poet by this test. The first piece, as we have said, is "The Return of Paris," and it commences as follows:

> "I stumbled thrice, and twice I fell and lay
> *Moaning and faint*, and yet I did not pray
> To my God or Goddess of them all;
> *Because I never doubted, climb or crawl*,"—(p. 3.)

How much like an Homeric episode this is, the reader may say for himself. But what of the poetry? A piece may be highly poetic, full of genuine inspiration, and yet have no particular resemblance to any thing Homeric or Grecian. But is that, or anything of the kind, the case in the present instance? Before turning over a single page, we transcribe a few lines more and ask, are they of the inspired order?

> "And now, what shall I pray for? since my whole
> Wish is accomplished, and I have your face
> Once more by mine in the remembered place,
> And the cool hand laid on my head aright,
> A little while before I die to-night."—(p. 3.)

Is this poetry? or is it prose? Supposing it were in the usual form of the latter, would it not be quite as much like it as it is now like poetry?

Passing on to "In Corinth," we search for something "racy of the soil." But what do we find? Let the following *morceau* answer:

> "I saw her *very seldom* in my life—
> *Too very seldom*, as I used to say;
> *It irked me bitterly* to waste the days
> So far from Corinth and the sight of her.
> *And does it irk me now to think of this?*"—(p. 15.)

We confess that it *irks* us not a little to search for poetry in passages like this. We are not easily discouraged, however, so we read on; and if we do not discover a vein of poetry we at least learn important news:

> "She is quite safe, I know, and out of reach—
> Quite out of reach of that accursed—God!
> That I could kill him! She is surely safe."—(p. 17.)

This, however, does not end the story; some very interesting details follow—such, for instance, as these:

"When I first heard
That she was brought before *that beastly Judge*
For blasphemy against his foolish Gods,
I knew what I was born for. When they said,
'Tis as pretext, this charge of blasphemy,
'Tis not the first time he has *played this game.*"—(pp. 17-18.)

We cannot answer for our readers; but to us this is much more suggestive of the Bowery than of Corinth, though far be it from us to deny that the last line especially is highly classical. But yet finer passages still await us. Of the heroine we are told how

"——she raised her eyes,
Not shamefully, but grandly, all the place
Seemed changed and sacred—a good place to be;
Not as I called it, as I watched outside
A *dung-hill darkened by a spotless rose*," etc.—(p. 20.)

It may puzzle those unacquainted with optics how "a dung-hill" can be "*darkened* by a spotless rose," but there is a line a little further down which reads,

"And the dung-hill a garden having her."

This may be sound doctrine in horticulture (a dung-hill "having" a handsome young lady is, at all events, something uncommon), but it strikes us as rather deficient in poetry. But the lady is not merely "a spotless rose," she is also "a speckless pearl," "a single star," etc. (p. 20); and we are told:

"She knew me in a moment, took my hand
And said, I thought—I knew that you would come.
What must we do? I told her all the plan."—(p. 20.)

This is reassuring. Our readers would scarcely care to be told "all the plan" as it is told here, and so we pass it by. But only three lines follow—one of these lines being occupied by the highly significant and poetical expression "So she said." The reader is expected to make a long pause after this, in order to be prepared for the startling announcement which follows, and which so appropriately and happily ends the poem:

"So she said.
But here they say, that I must fight the beasts
To-morrow. To-morrow! I beat them yesterday."—(p. 21.)

It must be admitted that this is "heroic" at least, in one sense; and if we regard the victory of the hero over "the beasts" as an episode, we shall have to acknowledge that the title of the volume is not so absurd after all.

To use a favorite term of our poet, it *irks* us to proceed, and yet we must glance at one "episode" more—"In Collatia." We do not take up this, however, to show how utterly devoid it is of poetry, either classic or unclassic, but merely to show from it how much Mr. Weeks depends on tiresome repetitions of words. Any one may indulge in an

occasional play upon words, although, if there be any wit in it, the grade of it is considerably lower than that of the pun. Let us first present the reader a few figures:

> "There are eight,
> Twelve, fifteen, *eighteen—eighteen, twenty grapes*,
> *Twenty grapes* on this cluster—*twenty*-one,
> *Twenty*-one *grapes* that just began to change."—(p. 25.)

This is perhaps classical, because grapes grow in classical countries; or it is poetical, because we have derived arithmetic from a poetical country. If it can be said to possess either quality, on any other ground, we cannot discover the fact; but let us add a few of the lines which immediately follow the grape-counting:

> "But so was this *unwilling*—look at it,
> This wretched *leaf*, this *leaf* that do I hold
> Or does it cling to my *unwilling* hand
> As clung the worm to its *unwillingness*?
> To its *unwillingness*, to its, to mine,
> To its *unwilling helplessness* and mine.?
> It is our *helplessness* and not our will."—(p. 25.)

Had this been an isolated case, we would not have noticed it; but the same affectation is met with, in a form more or less tedious, throughout "Episodes and Lyric Pieces." When Mr. Weeks has no other words than such as "am" and "not," even these are presented to us *ad nauseam* as poetry; instance:

> "But I *am not* one of them, I *am not*—
> I *am not* one of them. I *am* myself."—(p. 24.)

In short, affectation is the thing which, above all others, spoils our author. He affects to be very classical, very witty, and very original; with what success he does so, our readers may judge from the above specimens, altogether independently of anything we have said. Had he depended less on what he is not, and more on what he is, the result would have been much better than it is; for it is almost superfluous to say that it is when he is most pompous and makes most display he is least successful in writing poetry. Several of his smaller pieces, in which he makes no apparent laborious effort to be classical, witty, or original, are passable enough; some of them are, indeed, quite pretty. This is true, for example, of "The River," "The Mist," "The Katydid" "My Place," and one or two others. We cannot say that there is much poetry in them, but they possess sufficient merit to satisfy us that if the author would study more, and select his subjects nearer home, at least until he has studied sufficiently, he could produce effusions of a much higher order than his "Episodes and Lyric Pieces."

The First and Second Part of a work on Government. By J. B. COLT. Pamphlet. Hartford: Case, Lockwood & Brainard, 1870.

As this *brochure* did not fall into our hands until we had nearly closed the reviews for our present number, we have only had time to read the first Part. To this, therefore, we must confine our remarks on the present occasion; but if the discussion be carried on in the following parts with so much vigor and ability as it is in the first, we shall not fail to present its salient points to our readers in a future number.

The work, thus far, is in the form of a dialogue—between a Republican, a Democrat, and a Monarchist; each of the *dramatis personæ* may be regarded as a fair average specimen of his party, in intelligence and liberality, the chief difference between the trio being that, in general, the most cogent arguments are put into the mouth of the Republican. The arguments of the Monarchist rank next, while those of the Democrat are in most cases scarcely worthy of the name; although, in a few instances, they are both logical and brilliant.

This will be best seen by allowing each to say a word for himself. The discussion opens as follows: "*Rep.*—What is Government? *Dem.*—An Evil. *Rep.*—No, a Good; the evil is only the measure of it in the instrument or instruments human. *Dem.*—To harness Liberty."

The discussion is carried on for some time before the Monarchist takes any part; yet he is evidently waiting for an opportunity to overwhelm both the Republican and the Democrat. "*Mon.*—I see you can never agree. One has a starting-point, a base of principle more adamantine, perhaps, than the other. *Circumstantial education*, outside of letters, *develops one kind of material* in mankind, *letters another*. Monarchy rightly developed in the interest of the whole has the power, by its every kind of education, to maintain peace or war with the least amount of cost or human injury."—(p. 8.)

Some, indeed, may regard this as stronger than any argument made use of by either Republican or Democrat, while others may inquire whether the "circumstantial education" may not be intended as a sly, if not ill-natured allusion to those teachings, the results of which are excessive tobacco-smoking, whistling for want of thought, slang, etc. In the latter case we think the Republican might have replied that there were times when monarchs were as ignorant and as ill-mannered as other mortals; although the Monarchist might have urged that what was done in the dark ages by certain rulers could hardly be held up as a criterion for the nineteenth century.

Be this as it may, we think the reader will now be able to understand that the plan of Mr. Colt embraces a wide range. In making his interlocutors discuss the principal forms of government of both the ancient and modern world, and present us striking pictures, especially those of Greece and Rome, he does not overlook the influences produced

by certain conditions of the social system, and certain quasi-religious ideas. Our author passes from the struggles between the patricians and the plebians in ancient Rome to those between the advocates of woman's rights and their opponents in our own country, paying some attention, by the way, even to our spiritualists; and when we differ with him most on certain points, we must admit that he maintains his views with ability and force.

In so hurried a glance as this we cannot undertake to examine the arguments of the different interlocutors in their bearing on each other; we will not lay the book aside, however without giving the reader some opportunity, however imperfect, to judge for himself as to the merits of "Colt on Government." With this view we turn over a few pages, and extract such two or three passages as happen to attract our attention, and, at the same time, are suitable for our limited space. Of all Addison's characters in the Spectator, his favorite was Sir Roger De Coverly. To the rest he was comparatively indifferent. He would allow his friend Steele to treat them as he liked; but such was his fondness for Sir Roger that he would not trust his character or his language for a moment to Steele, or anybody else. We are very much mistaken if Mr. Colt has not a similar fondness for his Republican; at all events, it is into the mouth of that personage he puts his best thoughts. Thus, for example, in speaking of the military character of the Romans, the Republican says:

"There is a greater than a warrior's excellence. When men save nations in fearful crises, as Napoleon did France, Gustavus Adolphus did Germany when struggling for religious rights, then they can receive no unmerited honors. The fame of Miltiades, Charlemagne, Henry XIV., or Washington, sinks deeply into the world-heart. Still, war is as a trade—unscrupulous, hard, rapacious, destructive, fomenting all the evil passions allied to all the vices, and is antagonistic to human welfare. The Roman rule was a despotism, cold, remorseless, self-seeking, and made them, while practicable,—calculating, overbearing, proud, scornful, imperious."—(p. 10.)

We are obliged to cut short this speech, though it is a very good and instructive one. The Democrat has but little to say; and that little is seldom dignified or classical. Turning over several pages we find the following:

"*Dem.*—A Monarchy cheap! An Empire, because we are going there. Well, we don't know where we are going. We know there are certain fixed facts for the living; the dead have had their day, and posterity will ripen from our manhood. I will not reason upon the question of your Peace-to-morrows, and your economical Monarchies with kings, nobles, and Priest-titles. The *Furies* don't belong to us no more than to you; they go it blind, perhaps sometimes God is there."—(p. 19.)

Now, although this purports to come from a Democrat, we confess that it reminds us more of a certain Secretary of the Treasury of the United States than of any other individual living or dead, whether democrat, republican, or monarchist. The "cheapness," "fixed facts,"

and "go it blind" are quite in character. If only a word or two on certain items of internal revenue had been added, the picture would have been complete. Whether the author designed anything of this kind or not we cannot undertake to say, further than that we think we detect a strong undercurrent of satire in several parts of the dialogue. The following may serve as an instance:

"*Rep*.—Woman suffrage means more than liberty. It means religious or well regulated liberty. Besides that, it means *openness and direct action* in all matters of Government, under just regulation, as contradistinguished from *recent legislative or official intrigues*."—(p. 6.)

Whether this be a hit at our national professor of political economy or not, our author does not take leave of woman's rights without furnishing the fair advocates of those rights a handsome argument:

"*Rep*.—Woman is God's instrument of civilization. Love is her first enjoyment, and *to be beloved the end and aim of her temporal existence*. Their tendency is to ideal the man-animal in man. *The soft flower-scented zephyrs of summer are not rejected because they won't propel a ship!* their affiliation with cold, water winds, gives a power which all can comprehend."—(p. 7.)

We accept most if not all of this as just; but "if to be beloved" is "the end and aim of her temporal existence," in our opinion the way to attain that end and aim is not to compete with men at the polls. But we can proceed no further for the present. Although, as already remarked, we do not agree with Mr. Colt in all his views on the subject of government, we are not the less willing to admit that the first part, at least, of his *brochure* will amply repay the intelligent reader for a careful perusal.

APPENDIX—INSURANCE, GOOD, BAD, AND INDIFFERENT.

Eleventh Annual Report of the Superintendent of the Insurance Department, State of New York, 1870.

Fifteenth Annual Report of the Insurance Commissioner of Massachusetts for 1870. Part II, Life and Accident Insurance.

THERE is nothing particularly remarkable in either Report this year; yet each will repay the perusal of all who take any interest in the important subject of which it treats. Both show that, although a large number have been deterred by the conduct of such underwriters as those we have criticised from time to time, the public, in general, continue to evince an increasing faith in the advantages of insurance. This shows the good sense and intelligence of our people.

There are cheats and sharpers in all kinds of business—nay, in all professions; lawyers, physicians, and even clergymen, as well as bankers and merchants, sometimes prove bad men; but none save the thoughtless and narrow-minded condemn all on this account. The effect it has on

the sensible portion of mankind is to induce them to appreciate the honest and faithful all the more. Nor have we ever written on insurance, or any other subject, in a different spirit; but there are none who impose on the public so glaringly and habitually but they will pretend to be a very ill-treated, slandered people if their peculiar mode of operation is pointed out.

There is no more ancient trick among a certain class of malefactors than that of pretending that any serious charge or imputation against them, individually, is an "attack" on the profession or calling to which they belong. This was well but painfully illustrated not long since by a minister of the gospel in a certain village not very far from New York, who was caught in the very act of robbing his neighbor's trunk and denounced to his congregation; although he was seen by several and had often been suspected before, his only defence was that it was not he, but the Methodist church, nay, the whole fabric of Christianity that was attacked, and that satanic infidelity was the cause of the whole scandal. It need hardly be added that many believed the accused and warmly sympathised with him, until they, too, lost some of their worldly goods in turn, and finally the culprit had to acknowledge that he had a monomania for certain kinds of theft. Now who thinks anything the less of the Methodist church, or of its ministers as a body, on account of the operations of the Rev. Dr. Klepteis?

It is true that the churches of the village were not so well filled for some time after the exposé as they used to be prior to that event; the reason was that a large portion of mankind have two characteristics in common with the sheep and the deer; that is, they never think, and they are easily frightened. But as the sheep and deer driven from rich, well-watered valleys by perhaps the shadow of a fierce dog or wolf, are apt to return when they see the goat and even the hare resort to them and thrive in them, so are scared men apt to return when they see their more courageous neighbors continue to believe that, after all, there are such things as human honesty, intergrity, and fidelity.

Recently there has been this sort of fluctuation in life insurance. A portion of the public have been frightened by the fraudulent operations of a certain class of underwriters, both in England and in our own country; but finding that things are not so bad as they thought, their former faith in insurance is slowly but steadily reviving. Events which are transpiring at the present moment will no doubt produce another scare, although they are such as ought to have been expected by all who have paid any attention to ethics, and have the least knowledge of simple arithmetic, not to mention algebra or geometry. At any rate, if our readers lose by those events the fault is not ours, for we have put them on their guard often and plainly enough. A case in point is just

before us: from the court reports of the New York Herald of the 18th inst. we extract the following passage:

"A very interesting and important, though almost rusty, if not obsolete, requirement of law has been taken up and for the first time in many years put to its legitimate use and application. A petition has been presented to the Supreme Court on behalf of the insurers in the Great Western Mutual Life Insurance Company for the issuance of an order by the court upon the company to show cause why the business of said company should not be closed and the company dissolved. It may, for the information of the general readers of the HERALD, be here remarked that *there are still even in our practical days companies who do business upon the principle of the universal insurance and assurance system of Mr. Tigg Montague, and that there are to-day living victims of the unblushing assurance of the representatives of the said Mr. Tigg Montague who too late find out that they have been perhaps for years paying into a concern which, like the lion's council chamber, had many visitors thereto, but no returns therefrom.* In this case the insurers in the company apply to the court for an order to compel the company to show cause why the business of the company should not be closed and said company restrained from exercising any of the corporate powers or franchises of said company, and from recovering, collecting or disposing of any money, property or effects owing to or held by said company."

We have italicised the facts representing a state of things against which we have been warning the public these ten years past; we have sought several times to protect the credulous from the wiles of this very company, as we will presently show those who may not remember the fact. In the official report on which the proceedings are founded, Mr. George W. Miller, the superintendent of the insurance department, declares that he has found "that the entire liabilities of said company exceed its entire assets about $140,000."

This does not surprise us in the least; three years ago, if not longer, and in almost every number of our journal issued since, we have ranked that company among those whose policies we regarded as little better than so much waste paper. But we need not go farther back than one year. Thus, in our number for December, 1869, we designated that company as "The Bage and Shader *Great* Paste Diamond Mutual" (p. 202) including in the title both the president and the secretary, the "paste, diamond" part having reference to the fact that the company boasted of numbering among its directors a certain successful vender of "jewels." Having mentioned several other corporations in the same category, we made such comments as the following: "Perhaps some of our readers will think that our English cousins ought to be very much frightened if all these companies would die in more or less rapid succession notwithstanding *the ostentatious display of wealth and consequence* made by some of them, and the display of impudence and effrontery made by all" (Ib.). This was in allusion to the panic caused in this country by the failure of so many English companies whose early demise had been predicted in a similar manner and from similar data in England.

In our following number we called the attention of our readers to the significant fact that the class of companies which opposed the investigation into the affairs of our insurance companies ordered by the legis-

ature were the American Tontine, the Great Western Mutual, etc., etc.* Alluding to the managers of those companies which maintain the credit of American underwriting, we observed: "It amuses those gentlemen as much as any farce or low comedy could, to hear orators like Morgan, Bage, etc., etc., preaching ethics" (Ib.). A little further on in the same number will be found the following: "We have remarked on a former occasion that the titles of a certain class of companies go, like dreams, by contrarieties, as the *Great* Western, the *Empire*, the American *Popular*, etc. (p. 417). This is but little of what we said on the subject, but it should have been enough.

Another of the concerns which we have been in the habit, for years, of placing in the same list, is the United States Life. This, we believe, has not yet passed into the hands of the "receivers," but its late president has found it necessary to retire from its management exactly as we have often predicted he would, and the old decrepid affair has amalgamated with a new hungry affair, which, according to the ingenious plan of miscalling above alluded to, was styled the "Ben Franklin Mutual Life."

The gentleman who got up the latter once did a large and profitable business as the agent of the Phœnix Mutual, of Hartford, one of the best companies in America. But prosperity was too much for him; he sighed, in the midst of it, to have at least the title of President, but his reign in the Ben Franklin Mutual was nearly as brief, and quite as inglorious as that of poor Sancho Panza, when placed in a somewhat similar position by his renowned master the Knight of the Rueful Countenance. Fortunately it so happened that, just as the burlesque on our great philosopher was in its last gasp, the United States Life was glad to find almost any body that ever filled or furnished an insurance policy willing to be called its president. However, it seems the amalgamation is now complete; we need hardly inform our scientific readers that the chief ingredients in the amalgam used in the process were invisible dust, brass, and oil of vitriol. How long these will hold the United States together remains to be seen.

We might mention several other companies that boast of "all the modern improvements," which, if they are not yet called upon by the proper authorities to close their offices and cease to swindle the public, or if they are not engaged in "amalgamating" with each other, will be sure to arrive at one result or other before long. As we have on former occasions mentioned the names, at least of the majority, it is not necessary that we should do so now. We prefer giving them an opportunity of mending their ways during the approaching holidays; making no criticisms until we see their next annual reports. In the meantime we will take a hurried glance at the reports before us, if only to show that they

* No. XL., p. 41.

fully bear us out in the statement that, although the bad and indifferent rather grow worse than improve, the good continue to increase the public confidence in the real advantages of life insurance. Thus the Massachusetts commissioner, in indicating the progress made, makes the following remarks:

"A single comparison will forcibly illustrate the popular appreciation of Life Insurance, and the immense growth of its business. During the decade just now closed, the Companies doing business in this Commonwealth (more numerous of course, in its last than in its first year) have made *most wonderful advances*, representing an amount of outstanding insurance increased from one hundred and fifty-one millions to nearly *two billions* of dollars, with a net premium reserve swollen from thirteen and a half to almost *two hundred millions of dollars*."*

Although these numbers are so enormous as scarcely to be comprehended, they do not exaggerate the facts. A little further on the commissioner pays a compliment to the underwriters of Massachusetts, the truth of which is equally undeniable:

"It has been said, with pertinence and truth, that the business of Life Insurance was inaugurated in this Commonwealth by *men of intelligence, public spirit, and uprightness*, who in an *eminent degree enjoyed the confidence of the people*. It may also be added, with equal pertinence and truth, that, so far as the influence of such a prestige has been perpetuated, the principles of integrity and sound policy have been scrupulously cherished and applied. Under *such auspices*, fraud, deceit, and financial corruption *cannot long flourish with impunity*." —(p. ix.)

The men to whom the language we have italicised applies, are such as the founders and present managers of the New England Mutual, which company, it will be remembered, we have always spoken of as exemplary. Its first president was Judge Philips, who was once the editor of the North American Review, and whose writings on insurance are regarded as authorities in Europe as well as in this country; and the gentleman who occupies that position now, has occupied it for years, and has been connected with the company, in one capacity or other, since its commencement—being now one of the oldest if not the very oldest underwriter in America—is eminently worthy, in inteligence and ability, as well as integrity, of succeeding such a man. Thus the "prestige" of which the commissioner speaks is one whose influence we have often indicated in these pages as in the highest degree salutary.

From a table, showing the progress of the companies of other states, we extract the following figures which, it will be remembered, are also corroborative of the views we have often expressed relative to the institutions which have produced such results:

COMPANIES.	INSURED, 1860.	INSURED, 1870	INCREASE.
Equitable, New York	$808,000 00	$134,078,586 35	$133,270,586 35
Knickerbocker, New York.....	1,848,994 00	65,518,967 51	63,674,973 51
Manhattan, New York.....	10,333,644 29	46,418,793 36	36,085,149 07
Mutual Benefit, N. J.....	22,559,177 00	130,023,585 12	107,464,408 12
Phœnix Mutual, Ct.	2,515,300 00	50,856,958 50	48,341,658 50

* Report of Insurance Commissioner, p. viii.

It is a much more agreeable task to us to indicate results like these on the part of American companies than to criticise and denounce, but to refrain from the latter when deserved, as in the instances in which we have done one or the other, were worse than mistaken kindness, or spurious patriotism. As reasonably might it be expected that, when the superintendent of the Insurance Department brings a company into court, as in the above case, so that the public may not be any longer imperilled by its operations, the judge should refuse to interfere, lest he might injure such useful and honorable American citizens as Bage, Shader & Co.

In accordance with this feeling, when we happen to meet with facts or figures tending to illustrate the good done by energetic, faithful companies to themselves as well as to the public, we are glad to record them. Thus we have just laid our hands on a paper which reminds us that the Manhattan Life had paid its policy-holders up to the 1st of January last three millions of dollars in dividends, and that by the 1st of January next, the grand aggregate will have amounted to nearly, if not quite, three millions and a half ($3,500,000). Add to this the sum paid promptly to widows and orphans, amounting in round numbers to *four millions*, take into account that there remains a surplus of nearly two millions ($1,729,317), and the *tout ensemble* will give some idea of what intelligence, energy, and perseverance can do, when guided by unswerving integrity.

The Manhattan always reminds us of its worthy off-shoot, the National of New York. From a comparative table before us, taken from the last Massachusetts Report, it appears that, of twenty-six leading life companies doing business in Massachusetts during the year ending December 31, 1869, whose assets furnished the largest security to its policy-holders after deducting its liabilities, was the National. We wish to avoid comparisons that might seem invidious, whenever we think we can do so consistently with the public interest; accordingly, we omit in this table the names of the other twenty-five to which the National is compared, but retain the figures showing the ratio:

FOR EVERY $100 OF LIABILITIES

The National New York has.....	$119 01	——	——	.....	$110 48
—— ——	118 92	——	——	.....	110 47
—— ——	118 11	——	——	.....	109 91
—— ——	117 17	——	——	.....	109 87
—— ——	116 82	——	——	.....	109 13
—— ——	116 71	——	——	.....	106 73
—— ——	116 11	——	——	.....	106 80
—— ——	115 95	——	——	.....	105 81
—— ——	115 86	——	——	.....	105 49
—— ——	115 39	——	——	.....	105 22
—— ——	114 67	——	——	.....	104 81
—— ——	114 47	——	——	.....	104 34
—— ——	111 90	——	——	.....	104 27

RESULT OF ABOVE EXHIBIT:

"The Actual Premium Reserve of the National is	$119 01	for every $100 it owe .
The Average Reserve of the above Twenty-six Companies is	115 61	"
Difference in favor of the National.....	$3 40	"

None of our companies look to the future with a keener or more scrutin is eyeing than the Mutual Benefit of Newark. Our readers may remember that in our last number we gave an extract from its recent report which concluded as follows:

"Some make all policies incontestible from any cause—allowing the party to practice any vicious habit known to shorten life, or to *destroy life itself*. These, withthe right, or license, to commit crime, even if its consequences shorten life, show such a departure from fundamental ideas, inseparable from our business of Life Insurance, that it is to be expected the coming years will result in *a terrible shaking among the Companies*."

Need we say that the "shaking" has already commenced? It might well seem an exaggeration that any company would encourage the destruction or shortening of life; but the reader may remember that it is now nearly, if not quite, a year since we commented on the boasted "new feature" of the New York Life, which accepts suicide as legitimate. Is it any wonder, then, that suicides exhibit a large increase among policy-holders? Accordingly, those companies who mean to do right are taking the necessary precautions against the "killing feature;" thus the Mutual Benefit has procured the opinion of Judge Teese, of Newark, on the subject, in the form of an able and learned argument, which concludes as follows:

"No one ought to be allowed to insure his life with the idea that if, through disgrace or misfortune, he desires no longer to live, he may put an end to his life, with the certainty or strong probability that his life insurance policy will be paid. Such doctrine is as subversive of good morals, as it is unjust to the insurers."

To us this is nothing new; nothing more than we have said in these pages when the suicide feature was introduced; it is precisely because it corroborates our own view that we quote it—the same as we quoted the "shaking" prediction in our last.

That companies which protest against doctrines "subversive of good morals" should be subjected to attacks from the authors and champions of those doctrines is no more than might be expected; accordingly, the Mutual Benefit, the Phœnix Mutual, the Knickerbocker, the Equitable, and the Manhattan are occasionally the objects of no slight amount of wrath. That which has excited the most recent ire among the manufacturers of "new features" and their agents, is, we believe, the K nickerbocker; but it seems rather to prosper than to suffer, abroad as well as at home, even during the most ingenious efforts made to weaken the public confidence in its integrity. Since it adopted the cash principle exclusively, its progress has been greater than ever. A Chicago paper, usually well informed on the subject, makes the following comment on the change:

"It is also to be remembered that the Knickerbocker consummated this revolution,—not for speculative reasons, at random or as a mere experiment,—but from honest and thorough conviction. It never stood more fairly than at the very moment of the change—perhaps never so well—since its organization. Whatever criticism it might have evoked at any previous period, the company entered upon the present year, in splendid and solid condition,—in the very vanguard of life insurance—with *seven millions of dollars* of assets and nearly *four millions* of income."

This is high praise, but we do not believe it is any exaggeration of the

facts. The same writer assigns many reasons for the success of the Knickerbocker; but with these our readers are sufficiently familiar.

We are not aware whether the Guardian Mutual numbers suicide among its "new features." At all events, if it has such fine "assets" as it boasts the widow seems to have some difficulty in receiving what she considers her share of them. There is, we believe, a suit in progress before the Supreme Court against that company in which the defendant is the widow of a gentleman who was formerly its examining physician. It seems the doctor neglected, or was unable, to pay, two premiums as they became due; his wife paid them, however, while he was still living; but it is alleged that the person to whom she gave the money, and from whom she obtained a receipt, was not authorised to receive it, although one of the company's clerks. It may be that the mode of payment was not strictly legal; but if all underwriters who could keep their money from the widow and the orphan on a mere technicality would do so, what would life insurance amount to? We do not pretend to be surprised, however, at the course of the Guardian; our readers may remember that, from the outset of its career, we have regarded it as a rather unsafe Guardian, but, of course, may have been mistaken in our opinion all the time. It is now alleged, we understand, that Dr. Koelges was not a learned or good physician; but, if so, we think that Dr. Peckham, the president of the company, should rather have sympathised with him, since, if the deceased was as bad a doctor as himself, it is pretty certain that he could hardly have been worse; and Garrick, who was a good judge of human nature, tells us

"A fellow feeling makes one wondrous kind."

Be this as it may, we feel satisfied that, so far as the matter is in his power—that is, so far as the law allows—the cause of the widow will be safe in the hands of Judge Barnard.

Far be it from us to maintain that no company should contest a case, for if this course were pursued all would soon be robbed. It is the interest of all policy-holders that no payment should be made but such as are just and lawful. There would be no end of suits against companies if a certain class of policy-holders found that both the courts and the public were in favor of making the former pay all claims; there should be no such morbid sympathy with injustice and wrong. If we are opposed, as we always have been to swindling underwriters, we are not the least opposed, and never have been, to swindling policy-holders. But it is certainly no swindling on the part of a widow to claim the policy on her deceased husband's life merely because there has been an informality in the payment of a small portion of the premium. On the contrary, to render it necessary for her to go to law at all in such a case, is both unwise and unjust.

But on the same day we hear of the suit of the doctor's widow we happen to take up a Cincinnati paper, and find another widow giving public expression to her gratitude for $10,000, the amount of her policy on the life of her husband who had neglected *four* payments. The reason the lady assigns for her gratitude is, that her lawyer had informed her she could not en

force payment. The company mentioned as having acted in this graceful and generous manner is the Phœnix Mutual, of Hartford—one of which, it will be remembered, we have always entertained a high opinion.

We see no company that maintains its honorable prestige better than the Security Life. It stands equally high in the New York and Massachusetts Reports. In the former its assets are marked $2,384,353.37; its cash in office and bank, $59,204.70 (p. xxvii). In the latter, under the head of "increase in 1869," No. of policies, 2,683, amount insured, $8,479,845.00.

The Continental (N. Y.) appears in all the official reports in a manner that fully confirms its prestige as a solid and honest company. Thus, for example, taking ten New York companies in Table No. II. (p. 213), of Judge Miller's Report, under the head of "surplus" we find it has more than four times as much as all the other nine companies—very nearly half a million. In the Massachusetts Report it stands equally high. Turning to Table VII, (p. lxxx), we find its excess of income over expenditures during the year ending December 31, 1869—$350,214.86.

If the reader will compare these results with the results of almost any of a score of other companies "inaugurated" about the same time then he will be able to appreciate what the Continental has done. Take the concerns known as "the Phipps companies," for example, *i.e.*, the Craftsmen Life and the Merchants' Life; instead of the former having a surplus it has a deficiency of $31,364.60.* What may be the deficiency of Mr. Phipp's new structure or whether it will continue sound until that enterprising gentleman has had time to dispose of it, and get up another, is one of the many things of which we are ignorant.

The Asbury Life is a modest company; it makes no boast or display of "new features" or "peculiar inducements," but it is intelligently and honestly managed. Turning to the Massachusetts Report, Table VII, (p. lxxxi), we find that the excess of its income over its expenditures during the past year was $60,125.83.† In the New York Report its assets are marked $304,351.05; its amount of "ready cash" $22,552, 43. This is a pretty good record for so young and unostentatious a company. The Anchor Life continues to reap the fruits of its intelligent energy and perseverance. It is already officially marked as having a surplus of $22,275.80.‡

There is but little said in either of the Reports before us, of Fire or Marine insurance. Neither exhibits any such increase in the number of companies devoted to it as Life insurance. As for the marine branch, it is dwindling into very slender proportions; our readers are aware that several marine companies have passed out of existence within the last five years; and of the few that are left, it would be rather a gain than a loss to the public if at least half of them would also give up the ghost.

It would be far otherwise, however, with our fire companies, several of which compare favorably with the best in the world. We have taken the pains to see how those companies stand in the Reports, whose modes of

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* See Miller's Report, Table II, p. 213.

† Table I, p. 210.

‡ N. Y. Rep., Table II., p. 214.

dealing with their policy-holders we have indicated as exemplary on former occasions; and we are glad to find that there is not one of them whose record is not good. Thus the most modest of all our New York companies —the Hope—appears in the New York Report, under the head of "gross assets," with $230,210.46; under the head of "cash in office etc.," with $5,053,98; while its ownership of United States securities is marked in the same table (p. 431) $40.900.00. This shows that Mr. Reese still maintains his character for that intelligent shrewdness which may be "slow but sure." The Washington Fire appears in the same table with assets amounting to pretty nearly a million ($783,052.19); cash in office and bank, $84,020, and United States securities $419,900. The Hanover shows that it is not without good means it has taken up its quarters in the granite palace of the Equitable, for its pile of assets is pret y nearly equal to that of the Washington, since it amounts to $726,399.94. As for the Ætna (Fire), of Hartford, we have no company in New York that has so large an accumulation. Our Home Fire is capital at boasting, but when it comes to the sober figures, however much it exaggerates, it cannot pretend that its assets amount to five and a half millions ($5,549,504.97), like the Hartford Ætna.

But it is proper the public should understand that there are fire companies which, like the corresponding class of life companies, have, in point of fact, no assets—fire companies which would be utterly unable, even if inclined, to meet the claims which one fire of no great dimensions would subject them to!

SECURITY LIFE INSURANCE

AND ANNUITY COMPANY,

Nos. 31 and 33 Pine Street, New York.

OFFICERS.

ROBERT L. CASE, Pres. THEO. R. WETMORE, Vice-Pres.
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No Restriction on Travel except in the Tropics.
Policies Incontestable after Three years Annual payments, except in case of Fraud.
This Company offers as great inducements to those PAYING THEIR PREMIUMS ALL IN CASH as any in the country, at the same time giving them the privilege of availing themselves of the LOAN, should the necessity arise.
All Policies are Non Forfeiting after Three Yearly Cash Payments have been made.

The Progress of this Company is shown by the Table Annexed.

New Policies.	No. of Policies issued each year.	Gross Receipts.	Amount Insured by New Policies.	Total Gross Assets.
Year 1862..	211	23,423	489,000	122,857
" 1863..	888	80,530	1,939,550	160,092
" 1864..	1,403	149,411	2,819,743	249,831
" 1865..	2,134	323,827	4,841,280	425,027
" 1866..	3,325	603,651	7,526,509	753,398
" 1867..	4,094	880,000	9,070,805	1,286,390
" 1868..	4,386	1,055,242	11,564,389	1,854,570
" 1869..	6,358	1,428,164	17,062,590	2,377,652

For General or District Agencies apply to the offices of the Company, Nos. 31 and 33 Pine Street, New York.

Liberal Commissions to experienced Agents.

CONTENTS OF ALL THE NUMBERS

OF THE

NATIONAL QUARTERLY REVIEW

OF WHICH COPIES CAN BE FURNISHED.

No. III.

December, 1860.

I. Lord Bacon.
II. American Female Novelists.
III. Camoens and his Translators.
IV. England under the Stuarts.
V. Tendencies of Modern Thought.
VI. A Glance at the Turkish Empire.
VII. Greek Tragic Drama—Sophocles.
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IX. Notices and Criticisms.

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I. Persian Poetry.
II. Americanisms.
III. Mexican Antiquities.
IV. Modern Criticisms.
V. Popular Botany.
VI. The Saracenic Civilization in Spain.
VII. Motley's United Netherlands.
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II. The Jesuits and their Founder.
III. Jeremy Bentham and his Theory of Legislation.
IV. Greek Comic Drama—Aristophanes.
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VI. The Canadas: their Position and Destiny.
VII. The Sciences among the Ancients and Moderns.
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IX. The Secession Rebellion; why it must be put down.
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September, 1861.

I. The Poetical Literature of Spain.
II. Hans Christian Andersen and his Fairy Legends.
III. Influence of Music—The Opera.
IV. The De Saussures and their Writings—Mme Necker.
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X. The Secession Rebellion and its Sympathizers.
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VI. Russia on the Way to India.
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March, 1862.

I. Vindication of the Celts.
II. Dr. Arnold of Rugby.
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IV. Christopher Martin Wieland.
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VII. Influence of Comparative Philology on Intellectual Development.
VIII. Our National Defenses.
IX. The Union, not a League but a Permanent Government.
X. Notices and Criticisms.

[See page 20.]

CORPORATION NOTICE—PUBLIC NOTICE IS HEREBY GIVEN to the owner or owners, occupant or occupants of all houses and lots, improved or unimproved lands affected thereby, that the following assessments have been completed and are lodged in the office of the Board of Assessors for examination by all persons interested, viz.:

1. For laying Belgian pavement in Laight street, from Canal to West street.

2. For laying Belgian pavement in Fifty-eighth street, from Lexington to Sixth avenue.

3. For laying Belgian pavement in Fifty-ninth street, from Third to Fifth avenue.

4. For regulating and grading, setting curb and gutter, and flagging Fifty-sixth street, from Tenth to Eleventh avenue.

5. For regulating and grading, setting curb and gutter, and flagging Seventy-eighth street, from First avenue to Avenue A.

6. For regulating and grading, setting curb and gutter, and flagging Fifty-sixth street, from Third to Sixth avenue.

7. For building outlet sewer in Sixty-second street and East river, and in Avenue A, between Sixty-first and Seventy-first streets, with branches.

8. For building sewers in Water, Monroe, Pitt, Clinton, Grand, Mangin, and Goerck streets, Manhattan lane, and Avenue B.

The limits embraced by such assessments include all the several houses and lots of ground, vacant lots, pieces, and parcels of land situated on—

1. Both sides of Laight street, from Canal to West street, to the extent of half the block on the intersecting streets.

2. Both sides of Fifty-eighth street, from Lexington to Sixth avenue, to the extent of half the block on the intersecting streets.

3. Both sides of Fifty-ninth street, from Third to Fifth avenue, to the extent of half the block on the inter-ecting streets.

4. Both sides of Fifty-sixth street, from Tenth to Eleventh avenue.

5. Both sides of Seventy-eighth street, from First avenue to Avenue A.

6. Both sides of Fifty-sixth street, from Third to Sixth avenue.

7. The property bounded by Sixty-first and Seventy-first streets, Second avenue and the East river, and the property bounded by Sixty-second and Sixty-eighth streets, and Second and Third avenues.

8. Both sides of Water street, between James and Oliver streets; both sides of Monroe street, between Gouverneur and Montgomery streets; both sides of Pitt street, between Broome and Delancey streets; both sides of Clinton street, between Grand and Division streets; both sides of Grand street, between Ridge and Columbia streets; both sides of Mangin and Goerck streets, between Grand and Broome streets; both sides of Goerck street, between Stanton and Houston streets; both sides of Manhattan lane, between Houston and Third streets; both sides of Avenue B, between Third and Fourth and between Twelfth and Thirteenth streets.

All persons whose interests are affected by the above-named assessments, and who are opposed to the same, or either of them, are requested to present their objections, in writing, to Richard Tweed, Chairman of the Board of Assessors, at their office, No. 19 Chatham street, within thirty days from the date of this notice.

RICHARD TWEED,
THOMAS B. ASTEN,
MYER MYERS,
FRANCIS A. SANDS
Board of Assessors.

OFFICE BOARD OF ASSESSORS,
NEW YORK, November 30, 1870.

No. IX.

June, 1862.

I. The Chinese Language and Literature.
II. Angelology and Demonology—Ancient and Modern.
III. Sir Thomas More and his Times.
IV. Maud as a representative Poem.
V. The Comedies of Molière.
VI. Education and Unity of Pursuit of the Christian Ministry.
VII. Sir Philip Sydney.
VIII. Aurora Leigh.
IX. Yellow Fever a Worse Enemy to Civilization than to Soldiers.
X. The National Academy of Design and its Great Men.
XI. Notices and Criticisms.

No. X.

September, 1862.

I. Lucretius on the Nature of Things.
II. The Works and Influence of Goethe.
III. Madame de Maintenon and her Times.
IV. Effects of War and Speculation on Currency.
V. Sacred Poetry of the Middle Ages.
VI. The Laws and Ethics of War.
VII. New Theories and New Discoveries in Natural History.
VIII. Poland—Causes and Consequences of her Fall.
IX. Quackery of Insurance Companies.
X. Notices and Criticisms.

No. XI.

December, 1862.

I. The Arts and Sciences among the Ancient Egyptians.
II. New England Individualism.
III. Genius, Talent, and Tact.
IV. Ought our Great Atlantic Cities to be Fortified
V. The Writings and Loves of Robert Burns.
VI. André and Arnold.
VII. Bacon as an Essayist.
VIII. Publishers: Good, Bad, and Indifferent.
IX. Direct and Indirect Taxation at Home and Abroad.
X. Notices and Criticisms.

No. XII.

March, 1863.

I. The Works and Influence of Schiller.
II. Astronomical Theories
III. Culture of the Human Voice.
IV. Lucian and His Times.
V. Electro-Magnetism and Kindred Sciences.
VI. Orators and Eloquence.
VII. Insurance Quackery and its Organs.
VIII. Charlemagne and his Times.
IX. James Sheridan Knowles.
X. Notices and Criticisms.

No. XIII.

June, 1863.

I. The Greek Tragic Drama—Æschylus.
II. Theology of the American Indians.
III. Phonographic Short-Hand.
IV. Arabic Language and Literature.
V. Earthquakes—their Causes and Consequences.
VI. Manhattan College.
VII. Woman—her Influence and Capabilities.
VIII. Peruvian Antiquities.
IX. Manufacture and Use of Artificial Precious Stones.
X. Notices and Criticisms.

No. XIV.

September, 1863.

I. The Insane and their Treatment—Past and Present.
II. The Clubs of London.
III. Cowper and His Writings.
IV. Feudalism and Chivalry.
V. Meteors.
VI. Spuriousness and Charlatanism of Phrenology.
VII. The Public Schools of New York.
VIII. Ancient Scandinavia and its Inhabitants.
IX. Social Condition of Working-Classes in England.
X. Commencement of Colleges, Seminaries, etc.
XI. Notices and Criticisms

No. XV.

December, 1863.

I. Prison Discipline—Past and Present.
II. Richard Brinsley Sheridan.
III. Influence of the Medici.
IV. Girard College and its Founder.
V. Modern Civilization.
VI. Laplace and his Discoveries.
VII. The House of Hapsburg.
VIII. The Mexicans and their Revolutions, from Iturbide to Maximilian.
IX. The Gypsies: their History and Character
X. Notices and Criticisms

[See page 22.]

THE

National Life Insurance Company

OF NEW-YORK.

No. 212 Broadway, Corner of Fulton Street,

(KNOX BUILDING.)

OFFICERS.

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JOHN C. DIMMICK, Attorney and Counsel.

HIRAM B. WHITE, M. D., Medical Examiner. Residence, No. 5 Green Avenue, near Fulton avenue, Brooklyn.—At office daily from 2 to 3 o'clock P. M.

The Equitable Life Assurance Society

OF THE UNITED STATES,

No. 92 BROADWAY, NEW YORK.

(After May 1st, 1870, Nos. 116, 118, 120, 122 and 124 BROADWAY.)

—o—

ASSETS, TWELVE MILLION DOLLARS.

INCOME, $6,500,000.00. ALL CASH.

PURELY MUTUAL. ANNUAL DIVIDENDS.

SUM ASSURED, NEW BUSINESS, in 1869, $51,021,141.

Being over Thirteen Millions greater than the New Business of any other Life Insurance Company in the world. Dividends payable at the end of one year, and Annually thereafter.

The insuring public should not allow itself to be deceived with regard to the term "*Annual Dividends.*" Many companies using this expression mean that their dividends are "*annual*" AFTER THEY ONCE BEGIN TO PAY THEM AT ALL; but they DO NOT BEGIN TO PAY until the settlement of the *third, fourth or fifth premium.*

Applications for Assurance may be made to any of the Society's Agents throughout the country, or in person or by letter to the New York Office. Gentlemen of character desirous of forming a connection with the Society as Agents are invited to communicate with its officers.

WILLIAM C. ALEXANDER, Prest. **HENRY B. HYDE, Vice-Prest.**

GEORGE W. PHILLIPS, Actuary,
JAMES W. ALEXANDER, Secretary.

EDWARD W. LAMBERT, M.D. } Med.
ALFRED LAMBERT, M.D. } Examiners.

No. XVI.

March, 1864.

I. Sources and Characteristics of Hindoo Civilization.
II. Juvenal on the Decadence of Rome.
III. The Brazilian Empire.
IV. Catiline and his Conspiracy.
V. Klopstock as a Lyric and Epic Poet.
VI. Our Quack Doctors and their Performances.
VII. Kepler and his Discoveries.
VIII. Ancient and Modern Belief in a Future Life.
IX. Notices and Criticisms.

No. XVII.

June, 1864.

I. Pythagoras and his Philosophy.
II. History and Resources of Maryland.
III. Russian Literature, Past and Present.
IV. Cemeteries and Modes of Burial, Ancient and Modern.
V. College of the Holy Cross.
VI. Liebnitz as a Philosopher and Discoverer.
VII. The Negro and the White Man in Africa.
VIII. Our Presidents and Governors compared to Kings and Petty Princes.
IX. Notices and Criticisms.

No. XVIII.

September, 1864.

I. Chemistry: its History, Progress, and Utility.
II. Vico's Philosophy of History.
III. Elizabeth and her Courtiers.
IV. Do the Lower Animals Reason?
V. William Pitt and his Times.
VI. Spinoza and his Philosophy.
VII. Commencements of Colleges, Universities, etc.
VIII. Emigration as Influenced by the War.
IX. Notices and Criticisms.

No. XIX.

December, 1864.

I. Pericles and his Times.
II. The Civilizing Forces.
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IV. Spanish Literature—Lope de Vega.
V. Currency—Causes of Depreciation.
VI. Leo X. and his Times.
VII. Chemical Analysis by Spectral Observations.
VIII. The President's Message.
IX. Notices and Criticisms.

No. XX.

March, 1865.

I. Italian Poetry—Ariosto.
II. Lunar Phenomena.
III. Grahame of Claverhouse and the Covenanters.
IV. Our Gas Monopolies.
V. Edward Everett.
VI. Machiavelli and his Maxims of Government.
VII. History, Uses, and Abuses of Petroleum.
VIII. Swedenborg and his New Religion.
IX. Notices and Criticisms.

No. XXI.

June, 1865.

I. The Celtic-Druids.
II. Wallenstein.
III. United States Banking System—Past and Present.
IV. The New York Bar—Charles O'Connor.
V. Phases of English Statesmanship.
VI. Modern Correctors of the Bible.
VII. Ancient and Modern Discoveries in Medical Science.
VIII. The Lessons and Results of the Rebellion.
IX. Notices and Criticisms.

No. XXII.

September, 1865.

I. Lord Derby's Translation of Homer.
II. William Von Humboldt as a Comparative Philologist.
III. The Wits of the Reign of Queen Anne.
IV. American Female Criminals.
V. The Negative Character of Cicero.
VI. The National Debt of the United States.
VII. The Civilization of the Ancient Persians.
VIII. Commencements of Colleges and Seminaries.
IX. Notices and Criticisms.

[See page 24.]

CORPORATION NOTICE.—PUBLIC NOTICE IS HEREBY GIVEN TO the owner or owners, occupantor occupants of all houses and lots, improved or unimproved lands affected thereby, that the following assessments have been completed and are lodged in the office of the Board of Assessors for examination by all persons interested, viz.:

1. For laying Belgian pavement in Lispenard street, from Broadway to West Broadway.
2. For laying Belgian pavement in Ludlow street, from Grand to Broome street.
3. For laying Belgian pavement in Sixty-sixth street, from Third to Fifth avenue.
4. For laying Belgian pavement in Seventy-eighth street, from First to Fifth avenue.
5. For laying Belgian pavement in One Hundred and Seventeenth street, from Fourth avenue to Harlem river.
6. For building sewer in Oak street, from James to Oliver street.
7. For building sewer in Fourth avenue, between Sixty-second and Seventieth streets, with branches in Sixty-third, Sixty-fourth, Sixty-fifth, Sixty-sixth, and Sixty-ninth streets.
8. For laying Nicolson pavement in Fifth avenue, from Fifty-ninth to Ninetieth street.

The limits embraced by such assessments include all the several houses and lots of ground vacant lots, pieces, and parcels of land situated on—

1. Both sides of Lispenard street, from Broadway to West Broadway, to theextent of half the block on the intersecting streets.
2. Both sides of Ludlow street, from Grand to Broome street, to the extent of half the block on the intersecting streets.
3. Both sides of Sixty-sixth street, from Third to Fifth avenue, to the extent of half the block on the intersecting streets
4. Both sides of Seventy-eighth street, from First to Fifth avenue, to the extent of half the block on the intersecting streets.
5. Both sides of One Hundred and Seventeenth street, from Fourth avenue to Harlem river, to the extent of half the block on the intersecting streets.
6. Both sides of Oak street, between James and Oliver streets,
7. The easterly side of Fourth avenue, between Sixty-second and Seventieth streets; both sides of Sixty-second, Sixty-third, Sixty-fourth, Sixty fifth, Sixty sixth, Sixty-seventh, Sixty-eighth, and Sixty-ninth streets, between Fourth and Lexington avenues; the southerly side of Seventieth street, between Fourth and Lexington avenues; and both sides of Sixty-ninth street, between Third and Lexington avenues.
8. Both sides of Fifth avenue, between Fifty-ninth and Ninetieth streets, to the extent of half the block on the intersecting streets.

All persons whose interests are affected by the above-named assessments, and who are opposed to the same, or either of them, are requested to present their objections, in writing, to Richard Tweed, Chairman of the Board of Assessors, at their office, No. 19 Chatham street, within thirty days from the date of this notice.

RICHARD TWEED,
THOMAS B. ASTEN,
MYER MYERS,
FRANCIS A. SANDS,
Board of Assessors.

OFFICE BOARD OF ASSESSORS,
NEW YORK, November 15, 1870.

No. XXIII.

December, 1865.

I. Authenticity of Ossian's Poems.
II. Daniel Webster and his Influence.
III. The Symbolism of the Eddas.
IV. Character and Destiny of the Negro.
V. Epidemics and their Causes.
VI. Lord Palmerston.
VII. Museums and Botanical Gardens.
VIII. The President's Message.
IX. Notices and Criticisms.

No. XXIV.

March, 1866.

I. Galileo and his Discoveries.
II. Australia—its Progress and Destiny.
III. International Courtesy—Mr. Bancroft's Oration.
IV. Sydney Smith and his Associates.
V. The President's Veto—Rights of Conquered.
VI. Lossing and his Works.
VII. Pain and Anæsthetics.
VIII. British Rule in Ireland.
IX. Notices and Criticisms.

No. XXV.

June, 1866.

I. Socrates and his Philosophy.
II. The Saturnian System.
III. Heine and his Works.
IV. Why the Opera fails in New York.
V. Buddhism and its Influence.
VI. The South American Republics and the Monroe Doctrine.
VII. Greek Tragic Drama—Sophocles.
VIII. Partisan Reconstruction.
IX. Notices and Criticisms.

No. XXVI.

September, 1866.

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II. The Philosophy of Death.
III. Arabian Civilization, and What We Owe It.
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V. Our Colleges and our Churchmen.
VI. Irish Law and Lawyers.
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December, 1866.

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III. Robert Boyle: his Influence on Science and Liberal Ideas.
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V. Hungary—her Literature and her Prospects.
VI. The Acquisition of Knowledge impeded by our Legislators.
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VIII. Education in Congress.
IX. Notices and Criticisms.

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II. Oliver Cromwell: his Character and Government.
III. The Temporal Power of the Pope.
IV. Chatterton and his Works.
V. Poisons and Poisoners.
VI. Negro Rule in Hayti and the Lessons it Teaches.
VII. The Sun and its Distance from the Earth.
VIII. Insurance—Good, Bad, and Indifferent.
IX. Notices and Criticisms.

No. XXIX.

June, 1867.

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II. Ornithology of North America.
III. Origin of Alphabetic Writing.
IV. Virgil and his new Translator.
V. Release of Jefferson Davis vs. Military Domination.
VI. Fichte and his Philosophy.
VII. What the Politicians make of our Postal System.
VIII. Euler and his Discoveries.
IX. Notices and Criticisms.

No. XXX.

September, 1867.

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II. Have the Lower Animals Souls or Reason?
III. Winckelmann and Ancient Art.
IV. Dante and his new Translator.
V. What has Bacon Originated or Discovered?
VI. Assassination and Lawlessness in the United States.
VII. The Jesuits in North America and Elsewhere.
VIII. The Civil Service in the United States.
IX. Notices and Criticisms.

[See page 26.]

ÆTNA INSURANCE CO.,

INCORPORATED 1819. CHARTER PERPETUAL.

CASH CAPITAL, $3,000,000.

Losses Paid in 50 Years, - - $26,000,000

ASSETS, JANUARY 1, 1870,

(At Market Value)

Cash in hand and in Bank	$682,582 08
Real Estate	253,319 14
Mortgage Bonds	967,125 00
Bank Stock	1,426,445 00
United States, State, and City Stock, and other Public Securities	2,220,033 75
Total	$5,549,504 97

LIABILITIES.

Claims not due, and unadjusted $256,068 89

L. J. HENDEE, President.

WM. B. CLARK, Ass't Sec'y. **J. GOODNOW, Sec'y.**

E. J. BASSETT, GENERAL AGENT. | J. C. HILLIARD, H. L. PASCO, } SPECIAL AGENTS.

THE

Hope Fire Insurance Co.

OFFICE, No. 92 BROADWAY.

Cash Capital* - - - - - - - - - *$150,000
Surplus, July 1, 1869* - - - - - - - - *80,083

The advantages offered by this Company are fully equal to any now offered by other reliable companies, comprising a liberal commission to Brokers, placing entire lines of insurance with customary rebate to assured, and prompt settlement of losses.

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Henry M. Taber,	T. W. Riley,	S. Cambreleng,
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H. S. Leverich,	Robert Schell,	William H. Terry,
Joseph Grafton,	Amos Robbins,	J. W. Merscreau,
D. L. Eigenbrodt,	William Remsen,	Stephen Hyatt.

JACOB REESE, *President.*

JAMES E. MOORE, *Secretary.*

No. XXXI.

December, 1867.

I. Greek Comedy—Menander.
II. Animal Magnetism; its History, Character, and Tendency.
III. Management of our Finances; Ruinous Influence of Paper Money.
IV. Lafayette as a Patriot and Soldier.
V. Nebular Astronomy.
VI. Martin Luther and the Old Church.
VII. Mediæval German Literature — Eschenbach.
VIII. Heraldry: its Origin and Influence.
IX. Notices and Criticisms.

No. XXXII.

March, 1868.

I. Epicurus and his Philosophy.
II. English Newspapers and Printing in the Seventeenth Century.
III. Progress and Influence of Sanitory Science.
IV. The Miscroscope and its Discoveries.
V. The Venetian Republic and its Council of Ten.
VI. Progress Made by American Astronomers.
VII. Supernatural Phenomena.
VIII. Impeachment of the President.
IX. Notices and Criticisms.

No. XXXIII.

June, 1868.

I. Seneca as a Moralist and Philosopher.
II. Present Aspect of Christianity.
III. Chess in our Schools and Colleges.
IV. The Rational Theory.
V. Thomas Aquinas and his Writings.
VI. Illustrated Satirical Literature.
VII. The Discoveries of Hipparchus and Ptolemy.
VIII. The Impeachment Trial and its Results.
IX. Notices and Criticisms.

No. XXXIV.

September, 1868.

I. Nicholas Copernicus.
II. Three Centuries of Shakspeare.
III. Epidemics—Ancient and Modern.
IV. The Siege of Charleston.
V. Our Colleges and Seminaries, Male and Female.
VI. "Strikes" *versus* Wages and Capital.
VII. Comets and their Orbits.
VIII. Our Presidential Candidates.
IX. Notices and Criticisms.

No. XXXV.

December, 1868.

I. Infernal Divinities—Ancient and Modern.
II. Early Christian Literature.
III. The Sorrows of Burns.
IV. The Phenomena of Sound.
V. Orangeism in Ireland: its History and Character.
VI. George William Frederick Hegel.
VII. The Miraculous Element in our Periodicals.
VIII. Ancient Etruria.
IX. Notices and Criticisms.

No. XXXVI.

March, 1869.

I. Diogenes the Cynic.
II. The Turko-Greek Question.
III. Beranger and his Sonz.
IV. Successive Conquests and Races of Ancient Mexico.
V. Columbia College.
VI. The Ruling Class in England.
VII. Celtic Music.
VIII. President Grant and his Cabinet.
IX. Notices and Criticisms.

[See page 28.]

DEPARTMENT OF PUBLIC WORKS, 237 BROADWAY. TO CONtractors.—Proposals enclosed in a sealed envelope, with the title of the work, and the name of the bidder endorsed thereon (also the number of the work as in the advertisement), will be received at this office until MONDAY, December 12, at 11 o'clock A.M., for the following works:

1. For paving Thirty-first street, between Second avenue and East river, with Belgian pavement.

2. For paving Fifty-ninth street, between Tenth avenue and Hudson river, with Belgian pavement.

3. For paving Forty-fifth street, between Fourth and Madison avenues, with Belgian pavement.

4. For paving Vandam street, between Macdougal and Greenwich streets, with Belgian pavement.

5. For paving Eighty-sixth street, between Third avenue and East river, with Belgian pavement.

6. For paving Thirty-ninth street, between Madison and Fifth avenues, with Belgian pavement.

7. For paving Twenty-fourth street, between Sixth and Tenth avenues, with Belgian pavement.

8. For paving Thirty-fourth street, between Ninth and Tenth avenues, with Belgian pavement.

9. For paving Forty-third street, between Madison and Fifth avenues, with Nicolson pavement.

10. For paving Forty-fourth street, between Fifth and Madison avenues, with Nicolson pavement.

11. For sewer in First avenue, between Sixty-ninth and Seventh-fourth streets, with branches, and in Second avenue, between Sixty-eighth and Seventy-first streets.

12. For sewer in Eighty-eighth street, between Second and Third avenues; in Ninety-first street, between Second and Fourth avenues, with branches.

13. For regulating and grading, curb, gutter, and flagging One Hundred and Fourth street, between Fifth avenue and East river.

14. For regulating and grading, curb, gutter, and flagging Sixty-third street, between First avenue and East river.

15. For regulating and grading, curb, gutter, and flagging Forty-sixth street, between Eleventh avenue and Hudson river.

16. For regulating and grading, curb, gutter, and flagging Madison avenue (section 2,) between Ninety-ninth and One Hundred and Fifth streets.

17. For regulating and grading, curb, gutter, and flagging Eighth avenue, (section 3,) between One Hundredth and One Hundred and Twenty-second streets.

18. For curb, gutter, and flagging Fifty-sixth street, between Seventh avenue and Broadway.

Blank forms of proposals, the specifications and agreements, the proper envelopes in which to enclose the bids, and any further information desired, can be had on application to the Contract Clerk at this office.

WILLIAM M. TWEED,
Commissioner of Public Works.

NEW YORK, November 30, 1870.

No. XXXVII.

June, 1869.

I. Vindication of Euripides.
II. Rousseau and his Influence.
III. The Parsees.
IV. The Philosophy of Population.
V. The Man with the Iron Mask.
VI. Vassar College and its Degrees.
VII Henry Kirke White.
VIII. The Irish Church.
IX. Notices and Criticisms.

No. XXXVIII.

September, 1869.

I. The Byzantine Empire.
II Popular Illusions.
III. The Primitive Races of Europe.
IV. The Queen of Scots and her Traducers.
V. The Troubadours and their Influence.
VI. The Ethics and Æsthetics of our Summer Resorts.
VII. King Arthur and the Round Table Knights.
VIII. Our Higher Educational Institutions, Male and Female.
IX. Note to Vassar College Article in our last Number.
X. Notices and Criticisms.

No. XXXIX.

December, 1869.

I. Hindoo Mythology and its Influence.
II. Hugo and Saint-Beuve.
III. The Greek Church.
IV. Women's Rights Viewed Physiologically and Historically.
V. Robin Hood and his Times.
VI. Our Millionaires and their Influence.
VII Mr. Gladstone and the Heroic Ages.
VIII. Eclipses and their Phenomena.
IX. Notices and Criticisms.

No. XL.

March, 1870.

I. Rabelais and his Times.
II. National Organic Life.
III. Louis XI. and his Times.
IV. Opium and the Opium Trade.
V. Erasmus and his Influence.
VI. The French Crisis.
VII. A Neighboring World.
VIII. Our Criminals and Our Judiciary.
IX. Notices and Criticisms.

No. XLI.

June, 1870.

I. Rise of Art in Italy.
II Johann Ludwig Uhland.
III. Rivers and their Influence.
IV. Origin and Development of the Modern Drama.
V. The Nations of the Persian Gulf.
VI. Specimen of a Modern Epic.
VII. Visit to Europe—Some Things usually Overlooked.
VIII. Notices and Criticisms.
IX. Appendix—Insurance, Good, Bad, and Indifferent.

No. XLII.

September, 1870.

I. Alfred the Great and his Times.
II. Madame de Sévigné and her Letters.
III. Icelandic Literature.
IV. Yachting not merely Sport.
V. The American Bar—William Pinkney.
VI. Sophocles and his Tragedies.
VII The Abyssinian Church.
VIII. The Franco-Prussian War.
IX. Notices and Criticisms.
X. Appendix—Insurance and its Contrasts.

No. XLIII.

December, 1870.

I. Female Artists.
II. The Lost Sciences.
III. Our Navy, and what it should be.
IV. De Quincey and his Writings.
V. The Structure of the Earth.
VI. Causes of the Franco-Prussian War.
VII. Development of the Cell Theory.
VIII. Party Strife and its Consequences.
IX. Notices and Criticisms.
X. Appendix—Insurance.

Continental Life Insurance Company

OF

NEW YORK,

Office, Nos. 22, 24 and 26 NASSAU STREET.

Policies issued in 1869,

8,778.

—:o:—

Assets, Dec. 31, 1869.

$3,500,000

—:o:—

Total Policies issued,

Over 21,000.

OFFICERS.

President,
JUSTUS LAWRENCE.

Vice President,
M. B. WYNKOOP.

Secretary,
J. P. ROGERS.

Actuary,
S. C. CHANDLER, Jr.

Medical Examiner,
E. HERRICK, M. D.

CITY OF NEW YORK,

Department of Finance,

BUREAU OF THE RECEIVER OF TAXES, COURT-HOUSE, PARK,

No. 32 CHAMBERS STREET,

November 1, 1870.

TO TAX-PAYERS. — Notice is hereby given that one per cent. will be added to all taxes unpaid on the 1st of December; also, an additional one per cent. on December 15. On all taxes remaining unpaid on January 1, 1871, interest at the rate of twelve per cent. per annum, calculated from the day the books were received by the Receiver of Taxes to the day of payment, will be added. No money will be received after 2 o'clock P.M. Office hours from 8 A.M. to 2 P.M.

BERNARD SMYTH, Receiver.

CORPORATION NOTICE.—PUBLIC NOTICE IS HEREBY GIVEN TO the owner or owners, occupant or occupants, of all houses and lots, improved or unimproved lands affected thereby, that the following assessments have been completed and are lodged in the office of the Board of Assessors for examination by all persons interested, viz.:

1. For laying Belgian pavement in Fifty-first street, from Eighth avenue to the Hudson river.

2. For laying Belgian pavement in Forty-sixth street, from Broadway to Ninth avenue.

3. For laying Belgian pavement in Forty-seventh street, from Madision to Fifth avenue.

4. For laying Belgian pavement in Sixty-first street, from Third to Fifth avenue.

5. For laying Nicolson pavement in Fifty eighth street, from Third to Lexington avenue.

6. For laying Nicolson pavement in Forty-fifth street, from Fifth to Madison avenue.

7. For setting curb and gutter, and flagging Fifth avenue, from Eighty-sixth to Ninetieth street

8. For setting curb and gutter and flagging, and regulating and grading Avenue C, from Seventeenth to Eighteenth street.

The limits embraced by such assessment include all the several houses and lots of ground, vacant lots, pieces, and parcels of land situated on—

1. Both sides of Fifty-first street, from Eighth avenue to the Hudson river, to the extent of half the block on the intersecting streets.

2. Both sides of Forty-sixth street, from Broadway to Ninth avenue, to the extent of half the block on the intersecting streets.

3. Both sides of Forty-seventh street, from Madison to Fifth avenue, to the extent of half the block on the intersecting streets.

4. Both sides of Sixty-first street, from Third to Fifth avenue, to the extent of half the block on the intersecting streets.

5. Both sides of Fifty-eighth street, from Third to Lexington avenue, to the extent of half the block on the intersecting streets.

6. Both sides of Forty-fifth street, from Fifth to Madison avenue, to the extent of half the block on the intersecting streets.

7. Both sides of Fifth avenue, from Eighty-sixth to Ninetieth street.

8. The easterly sides of Avenue C, from Seventeenth to Eighteenth street.

All persons whose interests are affected by the above-named assessments, and who are opposed to the same, or either of them, are requested to present their objections, in writing, to Richard Tweed, Chairman of the Board of Assessors, at their office, No. 19 Chatham street, within thirty days from the date of this notice.

RICHARD TWEED,
THOMAS B. ASTEN,
MYER MYERS,
FRANCIS A. SANDS,
Board of Assessors.

OFFICE BOARD OF ASSESSORS,
NEW YORK, November 25, 1870.

SECURITY
Insurance Company,
119 BROADWAY, NEW YORK.

JANUARY 1st, 1870.

Capital.....$1,000,000 00
Total Assets.....$2,017,869 81

A. F. HASTINGS, President.
W. B. BUCKHOUT, Vice-Pres't.
Nathan Harper, Secretary.

Fire and Inland Insurance at Lowest Rates.

SAFEST & CHEAPEST SYSTEM OF INSURANCE.

:o:

CASH CAPITAL. SCRIP PARTICIPATION.

:o:

Washington Insurance Company,
172 BROADWAY,
Corner of Maiden Lane. NEW YORK.

CASH CAPITAL.....$400,000
ASSETS, February 1st, 1870.....801,397

:o:

FIRE, MARINE & INLAND NAVIGATION INSURANCE.

:o:

The Policies entitled to participate receive 75 per cent. of the net profits.
Average Scrip Dividends for *Six* years *Forty-five* per cent. per annum.

HENRY WESTON, Vice-President. GEO. C. SATTERLEE, President.
WM A. SCOTT, Assistant Secretary. WM. K. LOTHROP, Secretary.

NEW JERSEY, CAMDEN & AMBOY,

AND

PHILADELPHIA AND TRENTON RAILROADS.

GREAT THROUGH LINE WITHOUT CHANGE OF CARS

TO

PHILADELPHIA, BALTIMORE, WASHINGTON,

AND THE WEST.

For Philadelphia:

Leave foot of Cortlandt Street at 7, 8.30, and 9.30 A.M., 12.30, 1, 4, 5, 7, 9.20, and 12 P. M.

Leave Pier No. 1, N. R., at 6.30 A. M. and 2 P. M.

For Baltimore and Washington:

Leave foot of Cortlandt Street at 8.30 A. M., 12.30 and 9.20 P M.

For Pittsburgh, Chicago, and Cincinnati:

Leave foot of Cortlandt Street at 9.30 A. M., 5 and 7 P. M.

WM. H. GATZMER, Agent,

C. & A. R.R. and Tr. Co.

CORPORATION NOTICE—PUBLIC NOTICE IS HEREBY GIVEN TO THE OWNER or owners, occupant or occupants of all houses and lots, improved or unimproved lands effected thereby, that the following assessments have been completed and are lodged in the office of the Board of Assessors for examination by all persons interested, viz:

1. For building receiving-basin northeast corner Thirty-sixth st. and Eighth avenue
2. For building receiving-basin northwest corner Seventeenth st. and Fifth avenue.
3. For building receiving-basin northwest corner Mulberry and Prince streets.
4. For building receiving-basin northeast corner Broadway and Manhattan street.
5. For building receiving-basin northwest corner Varick and Beach streets.
6. For building receiving-basin southwest corner Third avenue and Ninety-first st.
7. For building receiving-basin northeast corner Thirty-first st. and Fifth avenue.
8. For building receiving-basin northwest corner of Eleventh st. and University pl.
9. For building sewer in One Hundred and Twenty-first street, between First avenue and Avenue A.
10. For building sewer in Forty-eighth street, between Tenth and Eleventh avenues and in Eleventh avenue, between Forty-fourth and Forty-seventh streets.
11. For building sewer in One Hundred and Twenty-sixth street, between Third and Fifth avenues.
12. For building sewer in Madison avenue, between Forty-sixth and Fifty-ninth sts.
13. For building continuation of sewer in Forty-eighth street, at Hudson river.
14. For building continuation of sewer in Twenty-fourth street, at East river.
15. For laying Belgian pavement in Eighteenth street, from Sixth to Eighth avenue.

The limit embraced by such assessment include all the several houses and lots of ground, vacant lots, pieces, and parcels of land situated on—

1. The northerly side of Thirty-sixth street, between Seventh and Eighth avenues.
2. The westerly side of Fifth avenue, between Seventeenth and Eighteenth streets.
3. The westerly side of Mulberry street, between Prince and Jersey streets.
4. The easterly side of Broadway, between Manhattan and Lawrence streets, and the southerly side of Lawrence street, commencing at Broadway, and running easterly two hundred and thirty-two feet ten inches therefrom.
5. The northerly side of Beach street, between Varick and Hudson streets.
6. The block bounded by Lexington and Third avenues and Ninetieth and Ninety-first streets.
7. The easterly side of Fifth avenue, between Thirty-first and Thirty-second streets.
8. The westerly side of University place, between Eleventh and Twelfth streets.
9. Both sides of One Hundred and Twenty-first st. between First avenue and Avenue A, and the westerly side of Avenue A, between One Hundred and Twentieth and One Hundred and Twenty-first streets.
10. Both sides of Forty-eighth street, between Tenth and Eleventh avenues, and both sides of Eleventh avenue, between Forty-fourth and Forty-seventh streets.
11. Both sides of One Hundred and Twenty-sixth street, between Third and Fifth avenues.
12. Both sides of Madison avenue, between Forty-ninth and Fifty-third streets and between Fifty-fifth and Sixtieth streets, and the property bounded by Madison and Fifth avenues and Forty-seventh and Sixtieth streets.
13. The property bounded by Forty-seventh and Forty-ninth streets and Tenth and Twelfth avenues.
14. Both sides of Twenty-fourth street, between Avenue A and Second avenue, and both sides of First and Second avenues, between Twenty-fourth and Twenty-fifth sts.
15. Both sides of Eighteenth street, from Sixth to Eighth avenue, to the extent of half the block on the intersecting streets.

All persons whose interests are affected by the above-named assessments and who are opposed to the same, or either of them, are requested to present their objections, in writing, to Richard Tweed, Chairman of the Board of Assessors, at their office, No. 19 Chatham street, withing thirty days from the date of this notice.

RICHARD TWEED,
THOMAS B. ASTEN,
MYER MYERS,
FRANCIS A. SANDS,
Board of Assessors.

OFFICE BOARD OF ASSESSORS,
NEW YORK, December 12, 1870.

3

ONLY DIRECT LINE TO FRANCE.

The General Transatlantic Company's
MAIL STEAMSHIPS

Between New York and Havre, calling at Brest and Southampton.

The splendid vessels on this favorite route for the continent will sail from pier No. 50, North river, as follows:

PEREIRE, Daure, - - Saturday, Dec. 10.
LAFAYETTE, Roussau, - - Saturday, Dec. 24

Rates of Passage, Payable in Gold,
(WINE INCLUDED.)
To Brest or Havre.

First Cabin, - - - $140 | Second Cabin, - - - $75

These steamers do not carry steerage passengers.

GEO. MACKENZIE, AGENT.
No. 58 Broadway, New York.

SPECIAL NOTICE.—Hereafter the steamers of this line will touch at Southampton, England, to land passengers and specie.

CITY OF NEW YORK,

Department of Finance,

BUREAU OF THE RECEIVER OF TAXES, COURT-HOUSE, PARK,

No. 32 CHAMBERS STREET,

December 6, 1870.

TO TAX-PAYERS.—Notice is hereby given that an additional one per cent. will be added on the 15th inst. to all taxes unpaid previous to that day. On the 1st of January following interest at the rate of 12 per cent. will be added, to be calculated from the 6th day of October, 1870, to the date of payment.

BENARD SMYTH,
Receiver.

PROPOSALS

FOR

$250,000 DOCK BONDS

OF THE

CITY OF NEW YORK.

SEALED proposals will be received at the Comptroller's Office until Wednesday, December 28, 1870, at 2 o'clock P.M., when the same will be publicly opened, for the whole or any part of the sum of $250,000 of Dock Bonds of the city of New York, authorized by chapter 383 of Laws of 1870, and by a resolution of the Commissioners of the Sinking Fund, passed December 14, 1870.

Said bonds will bear interest at the rate of 7 per cent. per annum, payable on the 1st day of May and November in each year, and the principal will be redeemed on the 1st day of November, 1901.

The proposals will state the amount of bonds desired and the price per $100 thereof, and the persons whose proposals are accepted will thereupon be required to deposit with the Chamberlain the sums awarded to them respectively, together with any premium thereon.

On presenting to the Comptroller the receipts of the Chamberlain for such deposit, the parties will be entitled to receive certificates for equal amounts of the par value of the sums awarded to them, bearing interest from the dates of payment.

Each proposal should be sealed and endorsed "Proposals for Dock Bonds of the City of New York," and enclosed in a second envelope addressed to the Comptroller.

The right is reserved on the part of the Comptroller to reject any or all of the bids, if in his judgment the interests of the Corporation require it.

RICHARD B. CONNOLLY,
Comptroller.

CITY OF NEW YORK, DEPARTMENT OF FINANCE,
COMPTROLLER'S OFFICE, December 20, 1870.

CONTRIBUTORS

TO

THE NATIONAL QUARTERLY REVIEW.

☞ The following list includes only those whose contributions have attracted particular attention:

Contributors.	Titles of Articles.
ADLER, G. J., A.M.,* New York	William Von Humboldt as a Comparative Philologist.
DOYLE, Hon Dr. LAWRENCE, New York	The Canadas; their Position and Destiny.
BRISTOW, Dr. HENRY G., St. Louis, Mo.	Yellow Fever, etc.
CHEEVER, HENRY R., Boston, Mass.	Modern Italian Literature.
DANA, ALEX. H., New York	Philosophy of Population; Popular Illusions.
DENNISON, Prof. HENRY, Glasgow, Scotland	The Works of Charles Dickens.
GALBRAITH, REV. H LE P ER, Dublin, Ireland	Mexican Antiquities.
GREENE, CHARLES G. Jr., Boston, Mass.	The Turko-Greek Question; The Irish Church; The French Crisis.
HENZEL, Prof. CARL B., Philadelphia	Wills and Will Making.
HILL, CLEMENT HUGH, Boston, Mass.	William Pitt and his Times.
HUDSON, JOSEPH DANA, Portland, Maine	Vico's Philosophy of History.
LIEBER, Prof. JAMES T., Louisville, Ky.	New Theories, etc., in Natural History.
LLOYD, Prof. MAX. G., Boston	The Poems of Elizabeth Baraett Browning.
MACKENZIE, Dr. R. SHELTON, Philadelphia	Lord Palmerston; The Ruling Class in England; The Man with the Iron Mask; Irish Law and Lawyers; Sydney Smith and his Associates; Illustrated Satirical Literature.
MILLS, Rev. HENRY, LL.D., London, England	The Saracenic Civilization in Spain.
McLENAHAN, JOHN, New York	A Glance at the Turkish Empire; Hungary: Past and Present; Berkley, his Life and Writings; The Union not a League, etc.
MEZZOROCCHI, E. C., M. D. Boston	Count de Cavour.
MORSE, JOHN T., Jr., Boston	The Conspiracy of Cataline; Graham of Claverhouse, and the Covenanters; Wallenstein.
MUNSEN, Rev. WILLIAM T., Portland, Maine	Education, etc., of Christian Ministry
NILAN, Rev. Dr., Port Jervis, N. Y.	Present Aspect of Christianity
PERHAULT, Prof. EUGENE, Berlin, Prussia	Danish and Swedish Poetry.
PRENDERGAST, THOMAS D., LL.D., London, England	Italy: Past and Present.

* The academic degrees are given only of those whom the editor happens to know it possess such honors.

REED, JOS. J., Philadelphia..... . .The Parsees; Successive Conquests and Races of Ancient Mexico; Celtic Music; King Arthur and the Round Table Knights.

RYAN, Prof. D. J., St. Mary's College, Kentucky.....Sir Thomas Moore and his Times Sacred Poetry of the Middle Ages.

SEARS, E. I., LL. D.....Dante; Torquato Tasso; Camoens and his Translators; James Fenimore Cooper; The Nineteenth Century; The Modern French Drama; Persian Poetry; Modern Criticism; Ancient Civilization of the Hindoos; French Romances and American Morals; The Greek Comic Drama—Aristophanes; The Men and Women of Homer; Influence of Music—The Opera; The Poetical Literature of Spain; Vindication of the Celts; Christopher Martin Wieland; Bombastic Literature; Female Education, Good, Bad, and Indifferent; The Chinese Language and Literature; The Comedies of Molière; The Works and Influence of Gœthe; The Laws and Ethics of War; Lucretius on the Nature of Things; The Arts and Sciences among the Ancient Egyptians; The Quackery of Insurance Companies; Arabic Language and Literature; Spuriousness and Charlatanism of Phrenology; The Insane and Their Treatment, Past and Present; La Place and his Discoveries; The Mexicans and their Revolutions; The Brazilian Empire; Klopstock as a Lyric and Epic Poet; Our Quack Doctors and their Performances; Kepler and his Discoveries; Chemistry—Its History, Progress, and Utility; Do the Lower Animals Reason? Spinoza and his Philosophy; Commencements of Colleges, etc.; Pythagoras and his Philosophy; Leibnitz as a Philosopher and Discoverer; Our Presidents and Governors Compared to Kings and Petty Princes; Italian Poetry—Ariosto; Machiavelli and his Maxims of Government; The Celtic Druids; Galileo and his Discoveries; Socrates and his Philosophy; Authenticity of Ossian's Poems; Heine and his Works; Napoleon III.'s Julius Cæsar; Newton and his Discoveries; Alfieri; Robert Boyle and his Influence; The Ancient Phœnicians; Virgil and his New Translator; The Jews and their Persecutions; Dante and his New Translator; Greek Comedy—Menander; Martin Luther and the Old Church; Epicurus and his Philosophy; The Venetian Republic and its Council of Ten; Nicholas Copernicus; Infernal Divinities Ancient and Modern; Orangeism in Ireland; Diogenes the Cynic; Vindication of Euripides; Erasmus and his Influence; Vassar College and its Degrees; Sophocles and his Tragedies, etc., etc.

STUART, Prof. JAMES C., Aberdeen, Scotland.....The Sciences among Ancients and Moderns.

TROWBRIDGE, DAVID, Waterburgh, N. Y .....Comets and their Orbits; Nebular Astronomy; Eclipses and their Phenomena.

VOSBURG, J. H., The Sorrows of Burns; The Troubadours and their Influences; Rabelais and his Times.

WOODRUFF, Prof. J. B., Nashville, Tenn.....The Civilizing Forces.

WENTWORTH, Rev. E. L., Toronto, Canada.....The Works of Miss Evans.

CORPORATION NOTICE.—PUBLIC NOTICE IS HEREBY GIVEN TO the owner or owners, occupant or occupants of all houses and lots, improved or unimproved lands affected thereby, that the following assessments have been completed and are lodged in the office of the Board of Assessors for examination by all persons interested, viz.:

1. For building receiving-basin west side of Fifth avenue, opposite Seventy-fourth street.

2. For building receiving-basin corner of Mott and Prince streets.

3. For building receiving-basin corner of West street and Tenth avenue.

4. For building receiving-basin west side of Eighth avenue, near Fiftieth street.

5. For building sewer in Mulberry street, between Canal and Hester streets.

6. For building sewer in Little West Twelfth street, between Ninth avenue and Gansevoort street.

7. For building sewer in Fifty-fifth and Fifty-eighth streets, between Eighth and Ninth avenues.

8. For building sewer in Park street, between Mulberry and Mott streets.

9. For laying Nicolson pavement in Forty-third street, between Third and Fourth avenues.

10. For laying Hamar wood pavement in One Hundred and Twenty-eighth street, between Second and Sixth avenues.

11. For laying Belgian pavement in Seventeenth street, from First avenue to the East river.

12. For building sewer in Fifth avenue, between Forty-sixth and Fifty-ninth streets.

The limits embraced by such assessments include all the several houses and lots of ground, vacant lots, pieces, and parcels of land, situated on—

1. The Central Park.

2. The southerly side of Mott street, between Prince and Houston streets.

3. The southerly side of Little West Twelfth street.

4. The southerly side of Fiftieth street, between Eighth and Ninth avenues.

5. Both sides of Mulberry street, between Canal and Hester streets.

6. The property bounded by Hudson street, Ninth avenue, Little West Twelfth and Thirteenth streets.

7. Both sides of Fifty-fifth and Fifty-eighth streets, between Eighth and Ninth avenues, and the southerly side of Fifty sixth street, between Eighth and Ninth avenues.

8. Both sides of Park street, between Mulberry and Mott streets.

9. Both sides of Forty-third street, between Third and Fourth avenues, to the extent of half the block on the intersecting streets

10. Both sides of One Hundred and Twenty-eighth street, between Second and Sixth aveuues, to the extent of half the block on the intersecting streets.

11. Both sides of Seventeenth street, between First avenue and the East river, to the extent of half the block on the intersecting streets.

12. The easterly side of Fifth avenue, between Forty-seventh and Forty-ninth streets, and between Fifty-sixth and Fifty-seventh streets; the westerly side of Fifth avenue, between Forty-seventh and Forty-eighth streets, between Fiftieth and Fifty-third streets, and between Fifty-fifth and Fifty-eighth streets.

All persons whose interests are affected by the above-named assessments, and who are opposed to the same, or either of them, are requested to present their objections, in writing, to Richard Tweed, Chairman of the Board of Assessors, at their office, No. 19 Chatham street, within thirty days from the date of this notice.

RICHARD TWEED,
THOMAS B. ASTEN,
MYER MYERS,
FRANCIS A. SANDS,
Board of Assessors.

OFFICE BOARD OF ASSESSORS,
NEW YORK, December 20, 1870.

ASBURY

LIFE INSURANCE COMPANY,

OFFICE, 105 BROADWAY,

corner of Eleventh Street,

NEW YORK,

AND

CROSBY'S OPERA HOUSE,

CHICAGO.

Office of the Board of Education,

CORNER OF GRAND AND ELM STREETS,

NEW YORK, December 5, 1870.

Sealed proposals will be received at this office until the 28th day of December next, at 10 o'clock A.M., for supplying, for the use of the Public Schools under the jurisdiction of the Board of Education, Books, Stationery, and other articles required for one year, commencing on the 1st of January, 1871.

City and country publishers of books, and dealers in the various articles required, are hereby notified that preference will be given in all cases to bids of principals, the committee being desirous that commissions (if any) heretofore paid to agents or middle-men shall be deducted from the price of the various articles bid for.

A sample of each article must accompany the bid.

A list of the articles required will be furnished on application to the Clerk of the Board of Education.

TIMOTHY BRENNAN,
SAMUEL A. LEWIS,
FRANCIS A. PALMER,
Committee on Supplies.

UNITED STATES TREASURY.

NEW YORK, December 9, 1870.

In conformity with instructions from the Secretary of the Treasury, notice is hereby given to the holders of three per cent. temporary loan certificates, issued under the Acts of March 2, 1867, and July 25, 1868, that all of such certificates bearing date October 15, 1866, of the denomination of $5,000, between the numbers two hundred and forty-nine (249) and three hundred and fifty-six (356) inclusive, and of the denomination of $10,000 between the numbers one hundred and ninety-three (193) and three hundred and fifty-nine (159) inclusive, will be paid on presentation at this office, and that, from and after the 31st of January, 1871, such certificates will cease to bear interest, and will be no longer available as a portion of the lawful money reserve of any National Banking Association.

THOMAS HILLHOUSE,
Assistant Treasurer United States.

NATIONAL QUARTERLY REVIEW.

EXTRACTS FROM LEADING JOURNALS.

FOREIGN AND DOMESTIC.

—:o:—

This journal supports creditably the critical ability of New York, and often contains papers that would make a sensation if they appeared in some medium of longer traditional reputation.—*New York Daily Times.*

Il [the Editor] a mérité l'estime de nos savans par d'important travaux comme critique sur la haute education, aussi bien que la littérature.—*Independance Belge, Brussels.*

It is at once the most learned, most brilliant and most attractive of all their (the American) periodicals.—*London Spectator.*

Its articles are of the first order for vigor, comprehensiveness and ability. Its criticisms are keen, good tempered, and fearless. Literary charlatanism gets no mercy.—*National Intelligencer.*

La clarté, l'ordre, la précision du style; ce que les Anglais appellant *humour*, et parfois l'ironie, sont les qualités que distinguent le *National Quarterly Review*, au-dessus de tout autre journal littéraire Americaine.—*Le Pays, Paris.*

Aussi habile ecrivain que savant et inflexible critique.—*Paris Journal des Debats.*

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